ORDER NO.SIMMC 0112029A1

E1

# Service Manual

Microwave Oven

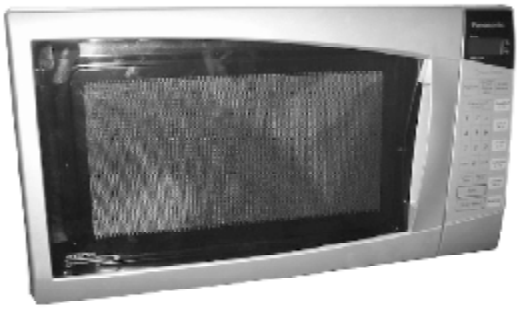
Simplified

## NN-S592SF / NN-S562BF/WF / NN-S542BF/WF / NN-S532BF/WF / NN-S512WF

APH(USA)

CPH(CANADA)

**Please file and use this specified manual together with the service manual for Model NN-S560BF/WF(ORDER NO. SIMMC0001002C3).**



## SPECIFICATIONS

Specifications for APH:

| Specifications: / Model: | NN-S592SF | NN-S562BF/WF | NN-S542BF/WF | NN-S532BF/WF |
|---|---|---|---|---|
| Power Source: | 120V AC Single Phase, 60Hz | | | |
| Power Requirement: | 1320W | 1320W | 1320W | 1320W |
| Output(IEC705-88): | 1300W | 1300W | 1300W | 1200W |
| Microwave Frequency: | *2450MHz | | | |
| Timer: | *99 min. 99 sec. | | | |
| Outside Dimensions: | *20"(518mm)(W) x 16"(407mm)(D) x 11"(301mm)(H) | | | |
| Oven Cavity Dimensions: | *14"(375mm)(W) x 15"(386mm)(D) x 8"(225mm)(H) | | | |
| Weight: | *23 lbs. (10.5 kg) | | | |
| Output power: IEC705-88 Test Procedure | | | | |
| Specifications subject to change without notice. | | | | |

Specifications for CPH:

| Specifications: / Model: | NN-S592SF | NN-S562BF/WF | NN-S512WF |
|---|---|---|---|
| Power Source: | 120V AC Single Phase, 60Hz | | |
| Power Requirement: | 1320W | 1320W | 1320W |
| Output(IEC705-88): | 1200W | 1200W | 1200W |
| Microwave Frequency: | *2450MHz | | |
| Timer: | *99 min. 99 sec. | | |
| Outside Dimensions: | *20"(518mm)(W) x 16"(407mm)(D) x 11"(301mm)(H) | | |
| Oven Cavity Dimensions: | *14"(375mm)(W) x 15"(386mm)(D) x 8"(225mm)(H) | | |
| Weight: | *23 lbs. (10.5 kg) | | |
| Output power: IEC705-88 Test Procedure | | | |
| Specifications subject to change without notice. | | | |

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## ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

## WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
   or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
4. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

| | | | |
|---|---|---|---|
| IN U.S.A. (PASC) | Panasonic Services Company<br>50 Meadowland Parkway,<br>Secaucus, New Jersey 07094<br>Attention: Technical Service Division.<br>(201)348-7000 | IN PUERTO RICO (PSC) | PSC<br>San Gabriel Industrial Park<br>65th Infantry Ave. Km.9.5<br>Carolina, Puerto Rico 00985<br>(787)750-4300 |
| | | IN CANADA (PCI) | Panasonic Canada Inc.<br>5770 Ambler Drive, Mississauga,<br>Ontario, L4W2T3<br>(905)624-5010 |

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

# PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

Panasonic®

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY **(U)**

## INVERTER WARNING

**This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current.** NEW HV

**IT HAS:**

1. **Very high voltage and high current circuits.**
   **It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.**
2. **Aluminum heat sink is energized with very high voltages and high heat energy.**
3. **Very high voltage may remain in circuitry even when oven is off. High voltage may remain in the capacitors on the board.**

**DO NOT:**

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage may remain in circuit.**

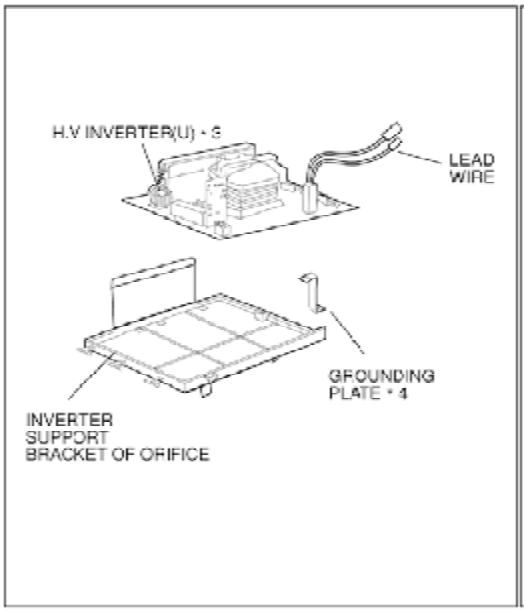
* 2. **Do not touch aluminum heat sink because it is very hot in high voltage and also very hot in high heat energy.**

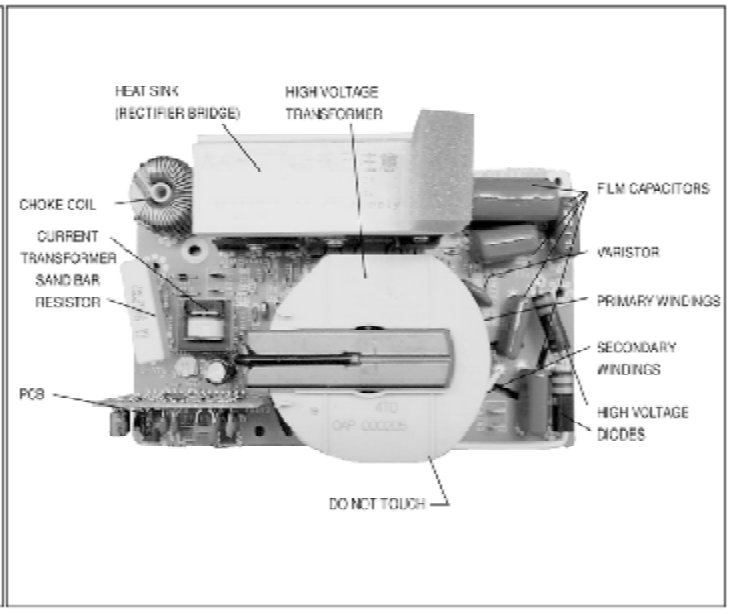
* 3. **Do not try to adjust or tamper with preset volume on the Inverter board because it is very dangerous to adjust without proper test equipment.**

* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

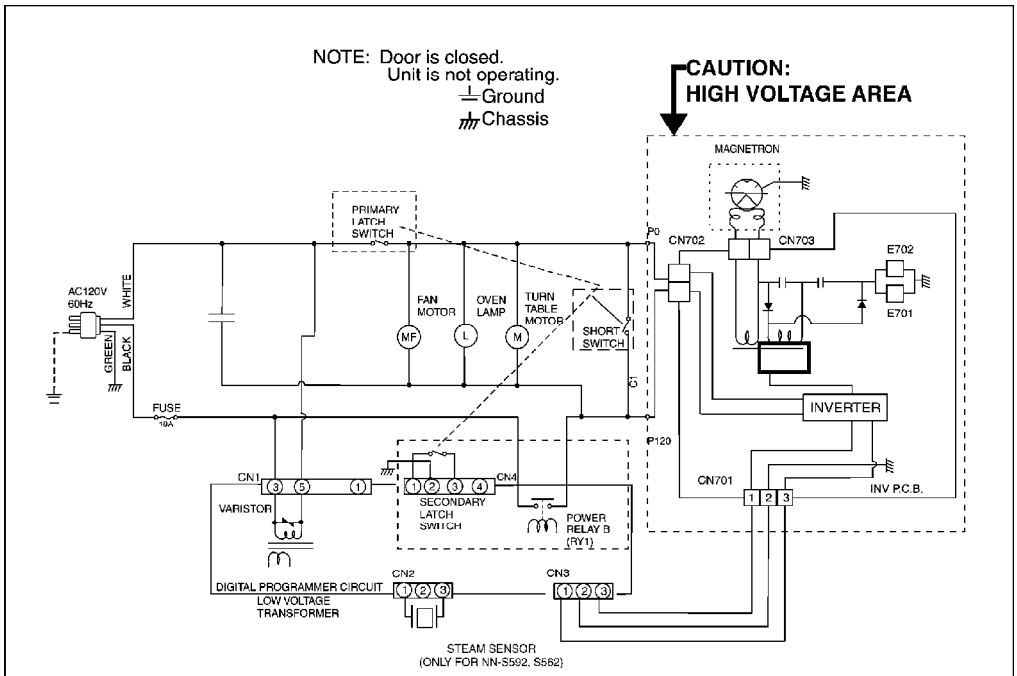
* 5. **For USA only:**
   **Do not try to repair Inverter PCB because it is very dangerous to repair it. Replace as whole High Voltage Inverter Circuit unit and return fully re-packed with original shipping box and shipping materials.**

## INVERTER POWER SUPPLY

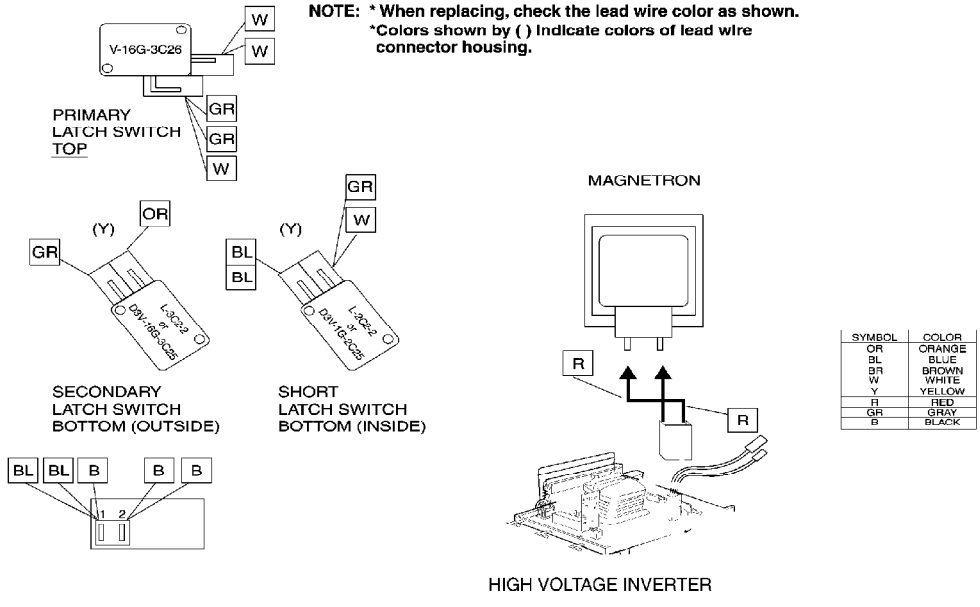


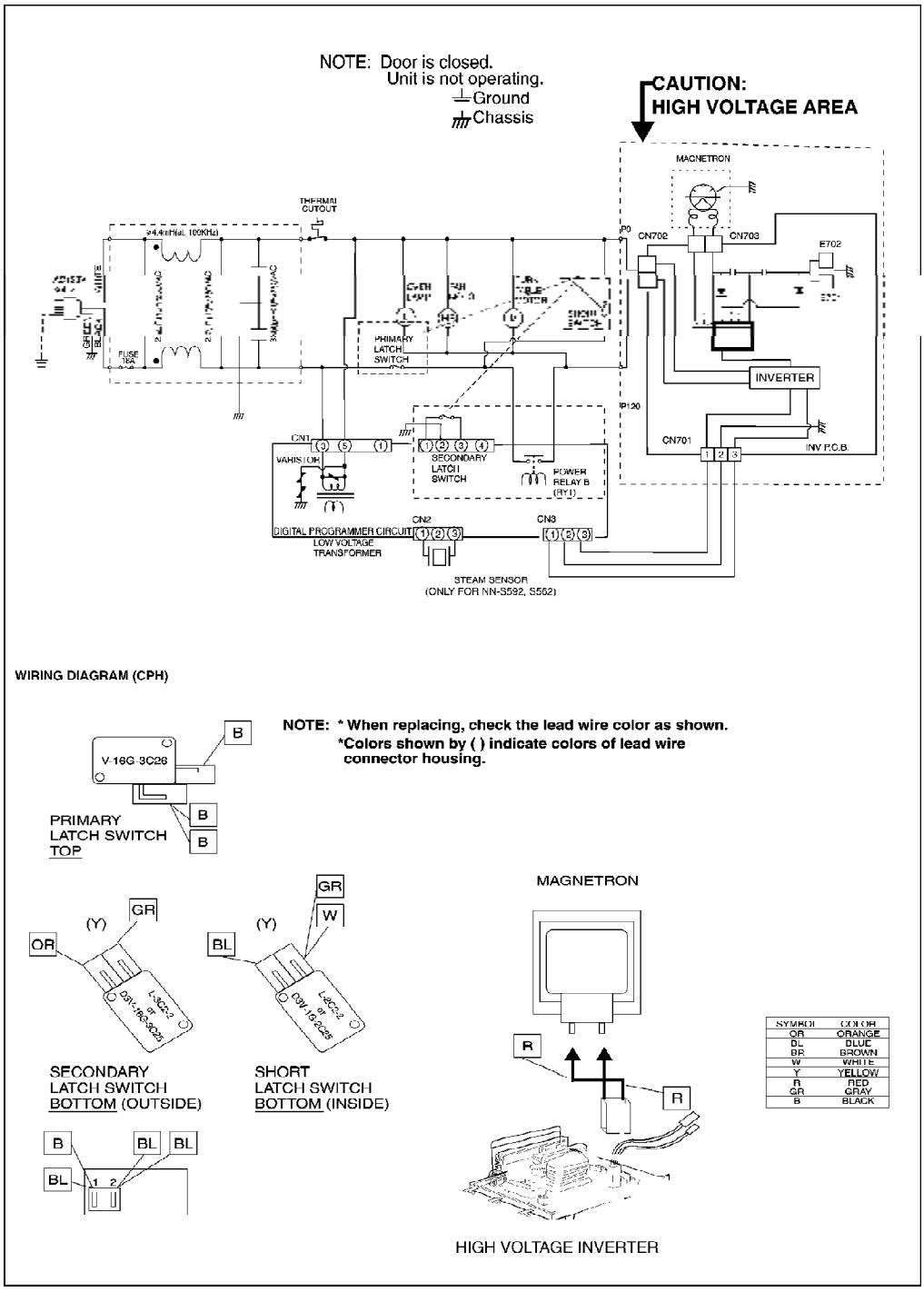
# 1. SCHEMATIC DIAGRAM (APH)




WIRING DIAGRAM (APH)




# 2. SCHEMATIC DIAGRAM (CPH)




# 3. MEASUREMENTS AND ADJUSTMENTS

**WARNING**

- For continued protection against radiation hazard, replace only with identical replacement parts (For touch models Part No. ANE6142-1450,Type No. V-16G-3C26-M for Primary latch switch; Part No. A61425180AP, Type No. L-3C2-2 for Secondary latch switch and Part No. A61785180AP, Type No. L-2C2-2 for short switch.)
- When the 18 Amp. fuse is blown due to the operation of the short switch, you must replace power relay B. Primary latch switch and the short switch. Then follow the installation procedures below.
- Interlock switch replacement In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
- Refer to schematic diagram to ensure proper connection.

## 3.1. Adjustment of Primary latch switch, Secondary latch switch and Short switch.

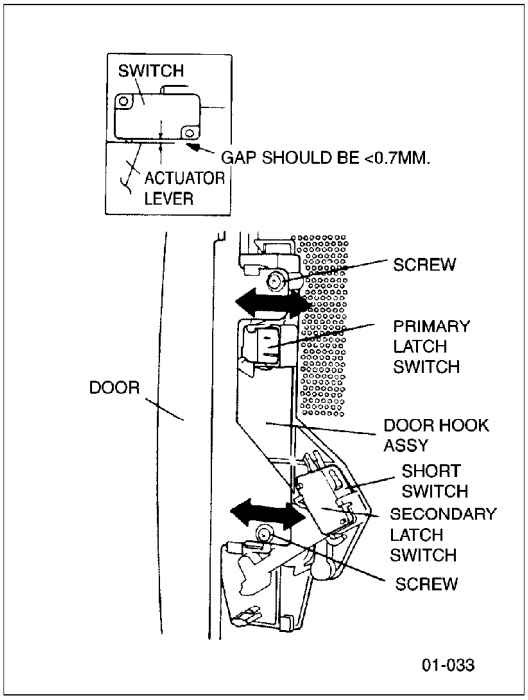
1. **When mounting Primary latch switch,Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in table.**

   **NOTE:**

   **No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.**

2. **When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.**

3. **Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.**




## 3.2. Measurement of microwave output

**The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.**

**Necessary Equipment:**

***1 liter beaker *Glass thermometer / *Wrist watch or stopwatch**

**NOTE:**

**Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.**

1. **Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the beaker's temperature. (recorded as T1).**
2. **Place the beaker on the center of glass cook plate. / Set the oven for High power and heat it for exactly one minute.**
3. **Stir the water again and read the temperature of the beaker. (recorded as T2).**
4. **The normal temperature rise at High power position for each model is as shown in table.**

**TABLE (1L-1min.test)**

| RATED OUTPUT | TEMPERATURE RISE |
|---|---|
| 1200W(IEC705-88) | Min. 18.5°F(10.3°C) |
| 1300W(IEC705-88) | Min. 19.8°F(11.1°C) |

# 4. PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

**WARNING**

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform PASC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

**NOTE:**

**The U.S. Government standard is 5 mW/cm2 while in the customer's home. 2mW/cm2 stated here is our own voluntary standard. (1mW/cm2 for Canada)**

## 4.1. Equipment

- Electromagnatic radiation monitor
- Glass thermometer 212°F or 100°C
- 600cc glass beaker

## 4.2. Procedure for measuring radiation leakage

**Note before measuring.**

- Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
- To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).
- Leakage with the outer panel removed ..... less than 5mW/cm2.
- Leakage for a fully assembled oven with door normally closed ..... less than 2mW/cm 2 (1mW/cm 2 for Canada).
- Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ..... less than 2mW/cm 2.

1. Pour 275 ± 15cc (9ozs± 1/2oz) of 20°C ± 5°C (68° ± 9°F) water in a beaker which is graduated to 600cc, and place in the center of the oven.

2. Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
3. When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
4. Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

#### 4.2.1. Measurement with the outer panel removed.

**Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.**

| WARNING |
| --- |
| Avoid contacting any high voltage parts. |

#### 4.2.2. Measurements with a fully assembled oven.

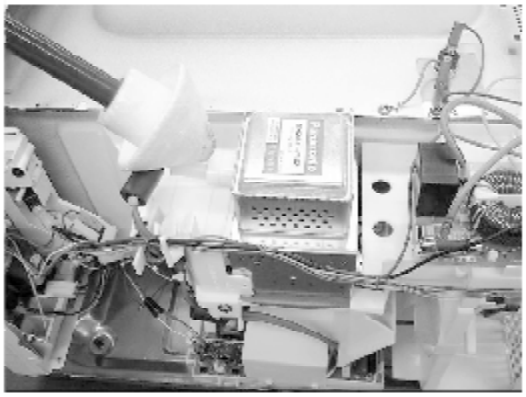
**After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.**

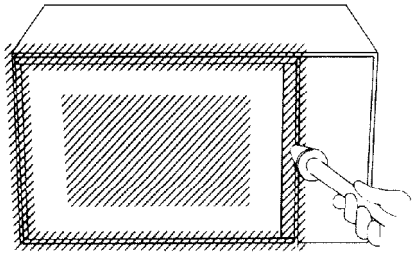
### 4.3. Record keeping and notification after measurement

- After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
  A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.
- Should the radiation leakage be more than 2 mW/cm$_2$ (1mW/cm for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PASC, PSC or PCI.

### 4.4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

**WARNING**
AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

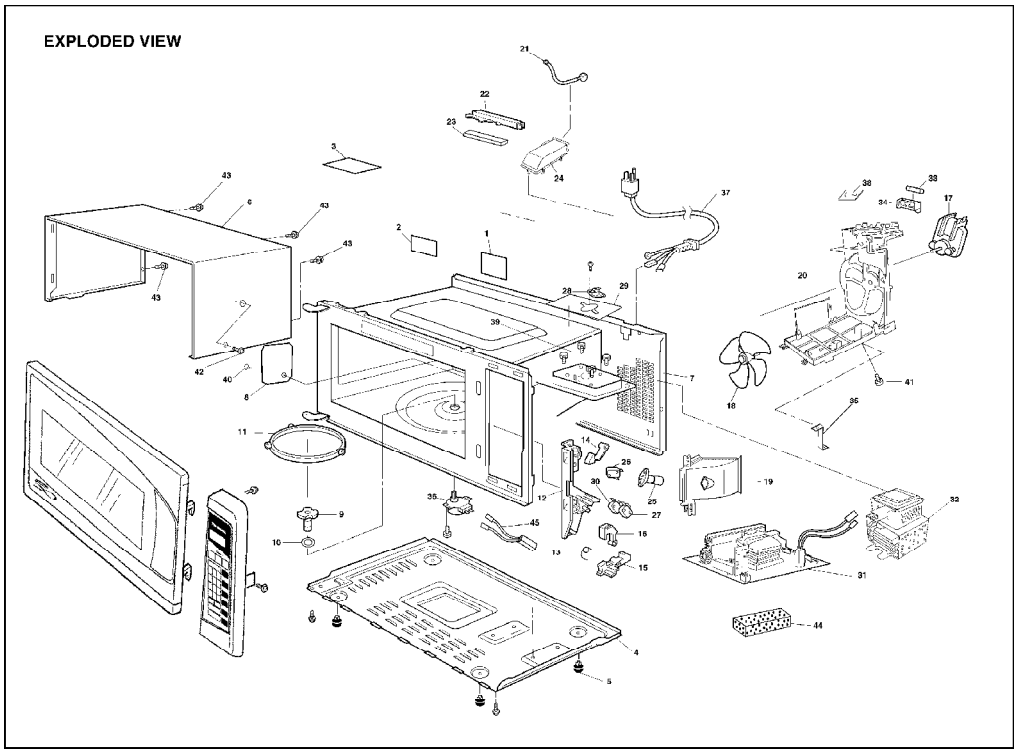




01-035

MOVE PROBE ALONG SHADED AREA(////// )AROUND EXHAUST OPENINGS(as shown)AND AROUND AIR INLET OPENING

# 5. EXPLODED VIEW AND PARTS LIST




# 6. PARTS LIST

**NOTE:**

1. **When ordering replacement part(s), please use part number(s) shown in this part list.**
   **Do not use description of the part.**
2. **Important safety notice:**
   **Components identified by ⚠ mark have special characteristics important for safety.**
   **When replacing any of these components, use only manufacture's specified parts.**

**NOTE:**

**"A" parts are supplied by MOD (Japan)**
**"F" parts are supplied by SIMMC (China)**

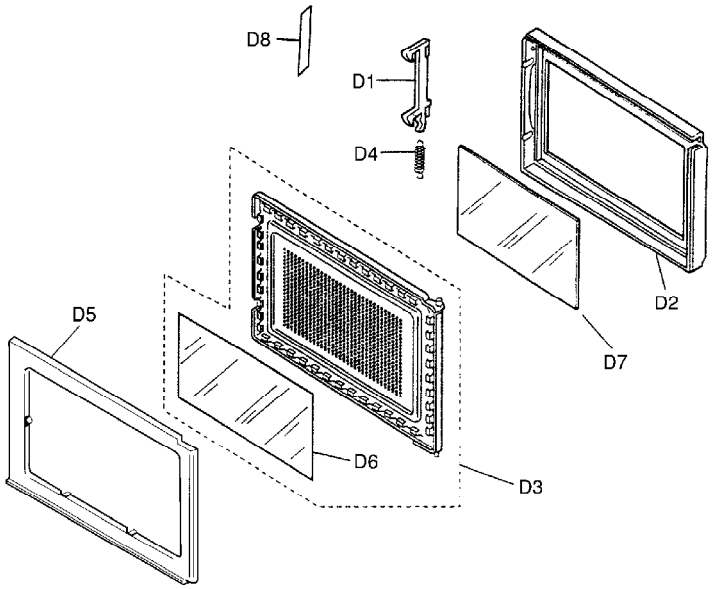
| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| 1 | | F00069660AP | CAUTION LABEL | 1 | ******APH |
| 1 | | F00067600CP | CAUTION LABEL | 1 | ******CPH |
| 2 | | F00075L70SAP | NAME PLATE | 1 | S592SF APH |
| 2 | | F00075L00BAP | NAME PLATE | 1 | S562BF APH |
| 2 | | F00075L00HAP | NAME PLATE | 1 | S562WF APH |
| 2 | | F00075L10BAP | NAME PLATE | 1 | S542BF APH |
| 2 | | F00075L10HAP | NAME PLATE | 1 | S542WF APH |
| 2 | | F00075L20BAP | NAME PLATE | 1 | S532BF APH |
| 2 | | F00075L20HAP | NAME PLATE | 1 | S532WF APH |
| 3 | | F00339660AP | FUSE LABEL | 1 | |
| 4 | | F10014T00AP | BASE | 1 | |
| 5 | | F10084T00AP | RUBBER FOOT | 4 | |
| | | | | | |
| 6 | | F110D5L70SAP | CABINET BODY(U) | 1 | S592SF APH/CPH |
| 6 | | F110D4T00BAP | CABINET BODY(U) | 1 | S***BF |
| 6 | | F110D5A00HAP | CABINET BODY(U) | 1 | S***WF |
| 7 | ⚠ | F201A4T00AP | OVEN(U) | 1 | S592SF APH/CPH, S562BF/WF APH, S562BF/WF CPH |
| 7 | ⚠ | F201A4T10AP | OVEN(U) | 1 | S542BF/WF APH, S532BF/WF APH, S512WF CPH |
| 8 | | F20555L00AP | COVER | 1 | |
| 9 | | F21314W00AP | PULLY SHAFT | 1 | |
| 10 | | F2177-F80 | WASHER | 1 | |
| | | | | | |
| 11 | | F290D9330AP | ROLLER RING(U) | 1 | |
| 12 | ⚠ | F30208790XN | DOOR HOOK | 1 | |
| 13 | | F3097-5L00 | LATCH SPRING | 1 | |
| 14 | | F31368790XN | HOOK LEVER A | 1 | |
| 15 | | F31378790XN | HOOK LEVER B | 1 | |
| | | | | | |
| 16 | | F31388790XN | HOOK LEVER C | 1 | |
| 17 | | F400A4T00AP | FAN MOTOR | 1 | AC120V, SINGLE PHASE, 60Hz |
| 18 | | F40084T00AP | FAN BLADE | 1 | |
| 19 | | F40254T00AP | AIR GUIDE A | 1 | |
| 20 | | F41444T00AP | ORIFICE | 1 | |
| | | | | | |
| 21 | | A707S4T00AP | STEAM SENSOR | 1 | S592SF APH/CPH, S562BF/WF APH/CPH |
| 22 | | F64505540AP | SENSOR COVER B | 1 | S592SF APH/CPH, S562BF/WF APH/CPH |
| 23 | | F65435540AP | SENSOR COVER C | 1 | S592SF APH/CPH, S562BF/WF APH/CPH |
| 24 | | F65434T00AP | SENSOR COVER C | 1 | S592SF APH/CPH, S562BF/WF APH/CPH |
| 25 | | F612E4W00AP | INCANDESCENT LAMP (U) | 1 | 125V, 60Hz, 20W |
| | | | | | |
| 26 | ⚠ | J61424T00AP | MICROSWITCH | 1 | (PRIMARY LATCH SWITCH) (V-16G-3C25-L) |
| 27 | ⚠ | J61414T00AP | MICROSWITCH | 1 | (SECONDARY LATCH SWITCH) (D3V-16G-3C25) |
| 28 | ⚠ | F61455L00CP | THERMAL CUTOUT | 1 | 105°C, ******CPH |
| 29 | | F66264T00CP | THERMAL CUTOUT INSULATION BRACKET | 1 | ******CPH |
| 30 | ⚠ | J61784T00AP | MICROSWITCH | 1 | (SHORT SWITCH) (D3V-1G-2C25) |
| | | | | | |
| 31 | ⚠ | A606Y4T00AP | H.V.INVERTER (U) | 1 | ******APH |
| 31 | ⚠ | A606Y4T00CP | H.V.INVERTER (U) | 1 | ******CPH |
| 32 | ⚠ | 2M261-M32F | MAGNETRON | 1 | ******APH |

| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| 32 | ⚠ | 2M261-M32G | MAGNETRON | 1 | ******CPH |
| 33 | ⚠ | B62308250AP | FUSE | 1 | 18A/120V, 60Hz |
| 34 | | B62314000AP | FUSE HOLDER | 1 | ******APH |
| 35 | | J61844T00AP | GROUNDING PLATE | 1 | |
| | | | | | |
| 36 | | F63264080AP | TURNTABLE MOTOR | 1 | |
| 37 | ⚠ | F900C4T00AP | AC CORD W/PLUG | 1 | ******APH |
| 37 | ⚠ | F900C9660CP | AC CORD W/PLUG | 1 | ******CPH |
| 38 | | J692Y4T00CP | NOISE FILTER (U) | 1 | ******CPH |
| 39 | | XTWFNE4+12T | SCREW | 4 | FOR MAGNETRON |
| 40 | | XTTFNE4+6BN | SCREW | 1 | FOR COVER |
| | | | | | |
| 41 | | XYD4+EE12F | SCREW | 1 | FOR GROUNDING |
| 42 | | XTCA4+12AFS | SCREW | 1 | FOR CABINET BODY SIDE (S***SF) |
| 42 | | XTCA4+12AFK | SCREW | 1 | FOR CABINET BODY SIDE (S***BF) |
| 42 | | XTCA4+12AFW | SCREW | 1 | FOR CABINET BODY SIDE (S***WF) |
| 43 | | XTTAFE4T12A0 | SCREW | 4 | FOR CABINET BODY |
| 44 | | F0926100BB | CUSHION RUBBER | 1 | FOR INVERTER HEAT SINK |
| 45 | | F03528100XN | LEAD WIRE | 1 | FOR TURNTABLE MOTOR |

# 7. TRIM KIT PARTS LIST(NN-TK529 WAPH/BAPH/SAPH)

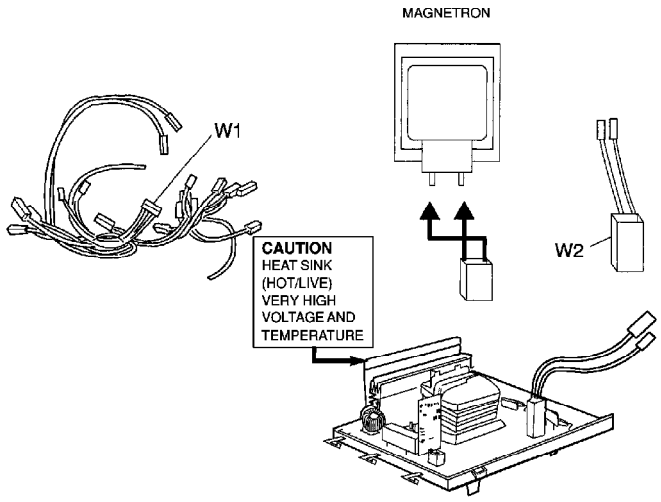
| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| | | F100MA870HAP | TRIM FRAME | 1 | TK529WAPH |
| | | F100MA870BAP | TRIM FRAME | 1 | TK529BAPH |
| | | F100MA870SAP | TRIM FRAME | 1 | TK529SAPH |
| | | F446HA860AP | BRACKET DU | 1 | |
| | | F4025A860AP | EXHAUST DUCT A | 1 | |
| | | F4026A860AP | EXHAUST DUCT B | 1 | |
| | | F0921000CV | CUSHION RUBBER C | 2 | |
| | | XTN4+12FN | SCREW | 2 | |
| | | XTT4+10FN | SCREW | 2 | |
| | | XTC3+23FNW | SCREW | 4 | TK529WAPH |
| | | XTC3+23FNK | SCREW | 4 | TK529BAPH |
| | | XTC3+23FNS | SCREW | 4 | TK529SAPH |
| | | F1122A720AP | SCREW DRIVER | 1 | |
| | | F0003A720AP | INSTALLATION INSTRUCTION | 1 | |

# 8. DOOR ASSEMBLY



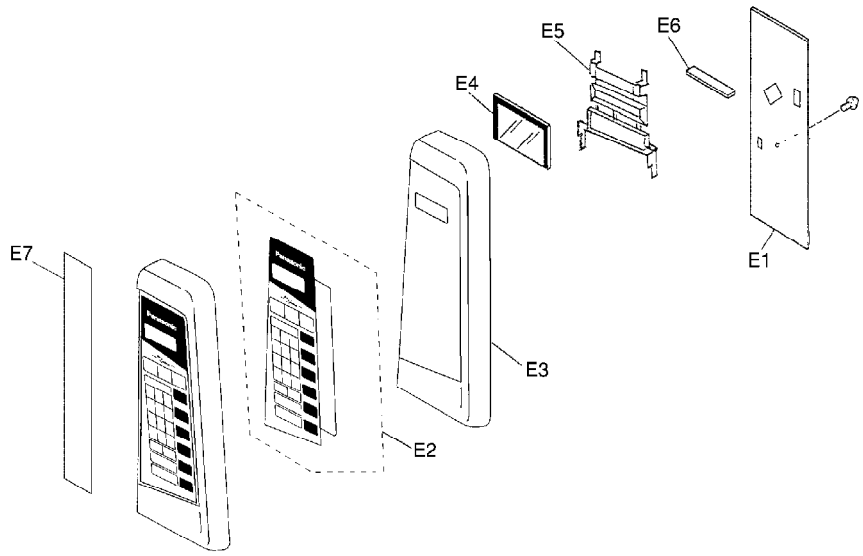

| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| D1 | | F30184Y30XN | DOOR KEY A | 1 | |
| D2 | | F30015L70SAP | DOOR A | 1 | S592SF APH/CPH |
| D2 | | F30015L00BAP | DOOR A | 1 | S562BF APH/CPH, S542BF APH, S532BF APH |
| D2 | | F30015L00HAP | DOOR A | 1 | S562WF APH/CPH, S542WF APH, S532WF APH, S512WF CPH |
| D3 | | F302K5L00AP | DOOR E (U) | 1 | |
| D4 | | F30215G10XN | DOOR KEY SPRING | 1 | |
| D5 | | F30854T00AP | DOOR C | 1 | |
| | | | | | |
| D6 | | F31454T00AP | DOOR SCREEN A | 1 | |
| D7 | | F31465L00BAP | DOOR SCREEN B | 1 | S592SF APH/CPH, S562BF APH/CPH, S542BF APH, S532BF APH |
| D7 | | F31465L00HAP | DOOR SCREEN B | 1 | S562WF APH/CPH, S542WF APH, S532WF APH, S512WF CPH |
| D8 | | F02459660AP | DHHS LABEL | 1 | S***APH |
| D8 | | F04114180CP | DHHS LABEL | 1 | S***CPH |

# 9. WIRING MATERIALS



| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| W1 | | F030A5L00AP | LEAD WIRE HARNESS | 1 | S592SF APH, S562BF/WF APH, S532BF/WF APH |
| W1 | | F030A5L20AP | LEAD WIRE HARNESS | 1 | S542BF/WF APH |
| W1 | | F030A5L00CP | LEAD WIRE HARNESS | 1 | S592SF CPH, S562BF/WF CPH, S512WF CPH |
| W2 | | F030E4T00AP | H.V.LEAD WIRE | 1 | ******APH |
| W2 | | F030E4T00CP | H.V.LEAD WIRE | 1 | ******CPH |

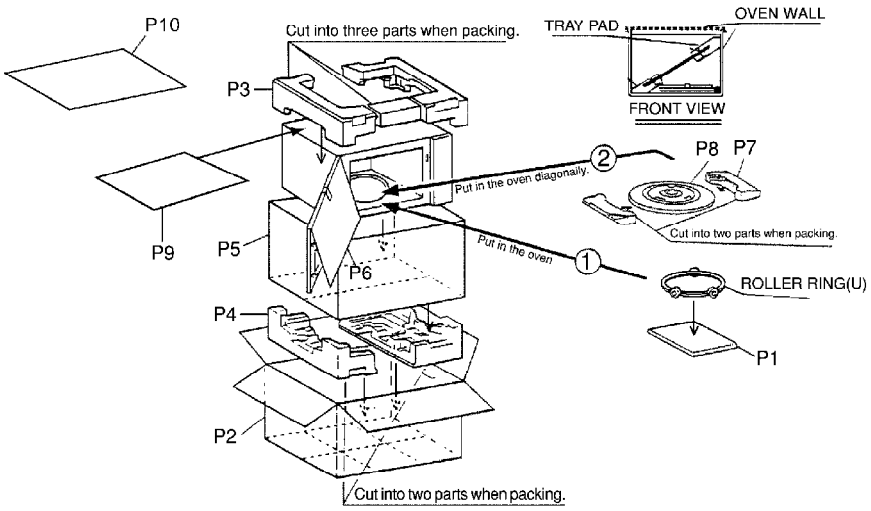
# 10. ESCUTCHEON BASE ASSEMBLY



| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| E1 | | F603L5L00AP | D.P.CIRCUIT | 1 | S592SF APH, S562BF/WF APH |
| E1 | | F603L5L10AP | D.P.CIRCUIT | 1 | S542BF/WF APH |
| E1 | | F603L5L20AP | D.P.CIRCUIT | 1 | S532BF/WF APH |
| E1 | | F603L5L00CP | D.P.CIRCUIT | 1 | S592SF CPH, S562BF/WF CPH |
| E1 | | F603L5L40CP | D.P.CIRCUIT | 1 | S512WF CPH |
| E2 | | F630Y5L70GAP | MEMBRANE SWITCH (U) | 1 | S592SF APH |
| E2 | | F630Y5L00BAP | MEMBRANE SWITCH (U) | 1 | S562BF APH |
| E2 | | F630Y5L00HAP | MEMBRANE SWITCH (U) | 1 | S562WF APH |
| E2 | | F630Y5L10BAP | MEMBRANE SWITCH (U) | 1 | S542BF APH |
| E2 | | F630Y5L10HAP | MEMBRANE SWITCH (U) | 1 | S542WF APH |
| E2 | | F630Y5L20BAP | MEMBRANE SWITCH (U) | 1 | S532BF APH |
| E2 | | F630Y5L20HAP | MEMBRANE SWITCH (U) | 1 | S532WF APH |
| E2 | | F630Y5L70GCP | MEMBRANE SWITCH (U) | 1 | S592SF CPH |
| E2 | | F630Y5L00BCP | MEMBRANE SWITCH (U) | 1 | S562BF CPH |
| E2 | | F630Y5L00HCP | MEMBRANE SWITCH (U) | 1 | S562WF CPH |
| E2 | | F630Y5L40HCP | MEMBRANE SWITCH (U) | 1 | S512WF CPH |
| E3 | | F80345L70SAP | ESCUTCHEON BASE | 1 | S592SF |
| E3 | | F80345L00BAP | ESCUTCHEON BASE | 1 | S***BF |
| E3 | | F80345L00HAP | ESCUTCHEON BASE | 1 | S***WF |
| E4 | | AEDDHJ5G60XN | DISPLAY | 1 | |
| E5 | | F66175L00AP | DISPLAY TUBE COVER | 1 | |
| | | | | | |

| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| E6 | | A67004T00AP | RUBBER CONNECTOR | 1 | |
| E7 | | F00075L70SCP | NAME PLATE | 1 | S592SF CPH |
| E7 | | F00075L00BCP | NAME PLATE | 1 | S562BF CPH |
| E7 | | F00075L00HCP | NAME PLATE | 1 | S562WF CPH |
| E7 | | F00075L40HCP | NAME PLATE | 1 | S512WF CPH |

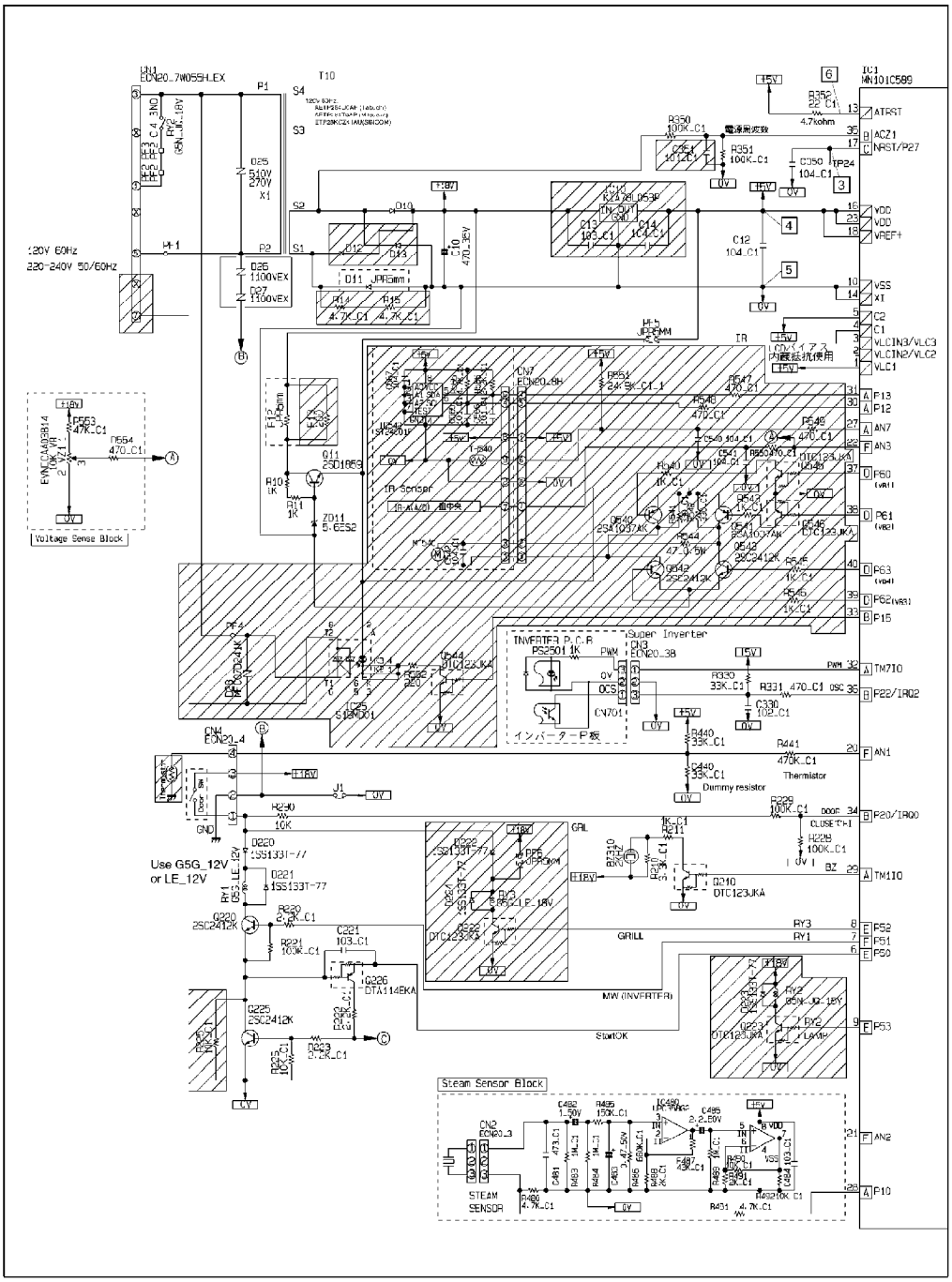
# 11. PACKING AND ACCESORIES

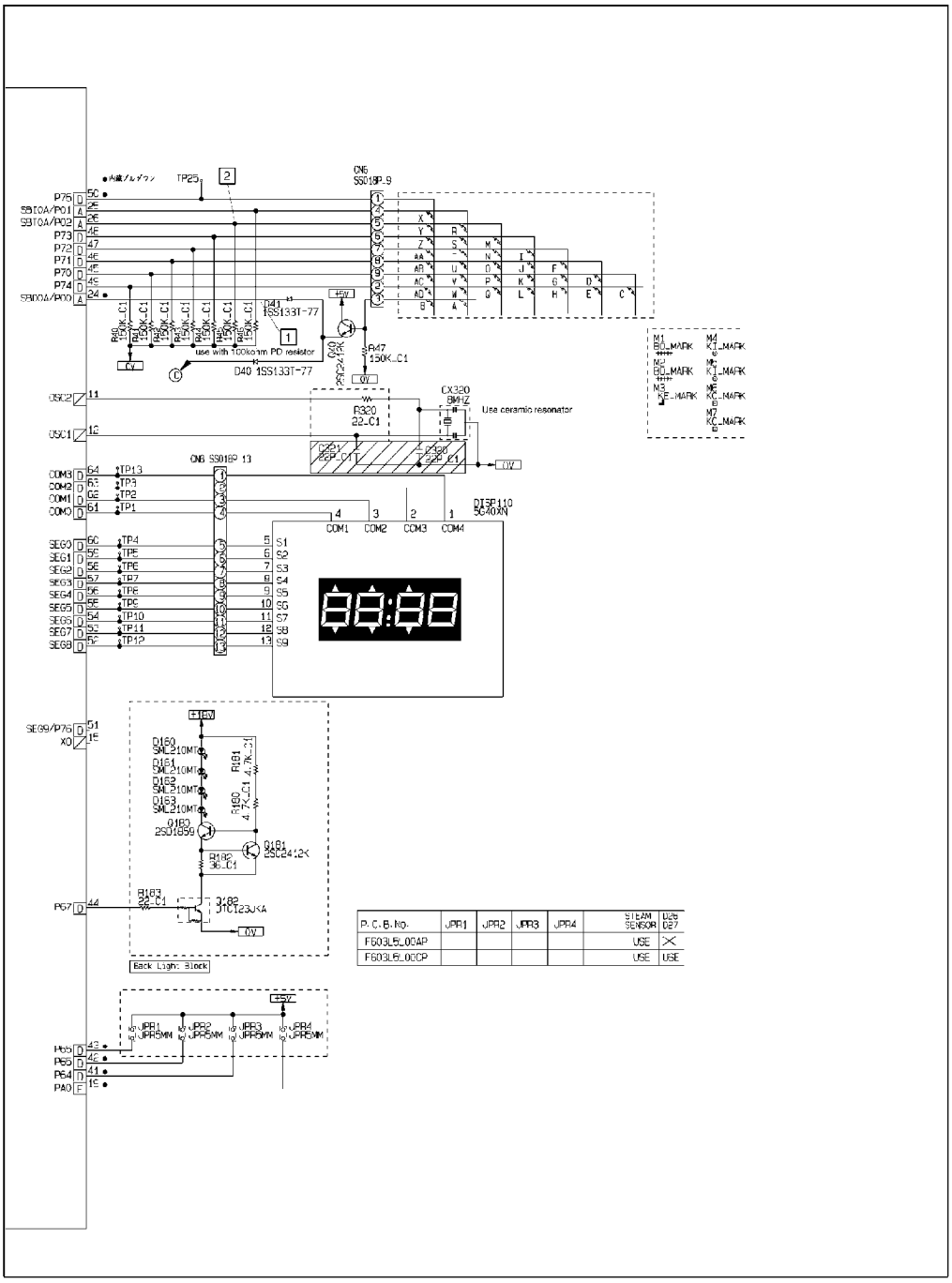


| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| P1 | | F00035L00AP | INSTRUCTION MANUAL | 1 | S592SF APH, S562BF/WF APH |
| P1 | | F00035L10AP | INSTRUCTION MANUAL | 1 | S542BF/WF APH, S532BF/WF APH |
| P1 | | F00035L00CP | INSTRUCTION MANUAL | 1 | S592SF CPH, S562BF/WF CPH |
| P1 | | F00035L40CP | INSTRUCTION MANUAL | 1 | S512WF CPH |
| P2 | | F01025L70SAP | PACKING CASE, PAPER | 1 | S592SF APH |
| P2 | | F01025L00BAP | PACKING CASE, PAPER | 1 | S562BF APH |
| P2 | | F01025L00HAP | PACKING CASE, PAPER | 1 | S562WF APH |
| P2 | | F01025L10BAP | PACKING CASE, PAPER | 1 | S542BF APH |
| P2 | | F01025L10HAP | PACKING CASE, PAPER | 1 | S542WF APH |
| P2 | | F01025L20BAP | PACKING CASE, PAPER | 1 | S532BF APH |
| P2 | | F01025L20HAP | PACKING CASE, PAPER | 1 | S532WF APH |
| P2 | | F01025L70SCP | PACKING CASE, PAPER | 1 | S592SF CPH |
| P2 | | F01025L00BCP | PACKING CASE, PAPER | 1 | S562BF CPH |
| P2 | | F01025L00HCP | PACKING CASE, PAPER | 1 | S562WF CPH |
| P2 | | F01025L40HCP | PACKING CASE, PAPER | 1 | S512WF CPH |
| P3 | | F01045L00AP | UPPER FILLER | 1 | |
| P4 | | F01055L00AP | LOWER FILLER | 1 | |
| P5 | | F01068100XN | P.E.BAG | 1 | |
| | | | | | |
| P6 | | F01078100XN | DOOR SHEET | 1 | |
| P7 | | F01134T00AP | TRAY STYROL | 1 | |
| P8 | | A06014T00AP | COOKING TRAY | 1 | |
| P9 | | A01924T00AP | SHEET | 1 | S***SF, S***BF |
| P10 | | F01265L00AP | REINFORCE MATERIAL | 1 | |

# 12. DIGITAL PROGRAMMER CIRCUIT (NN-S592, S562)

## SCHEMATIC DIAGRAM

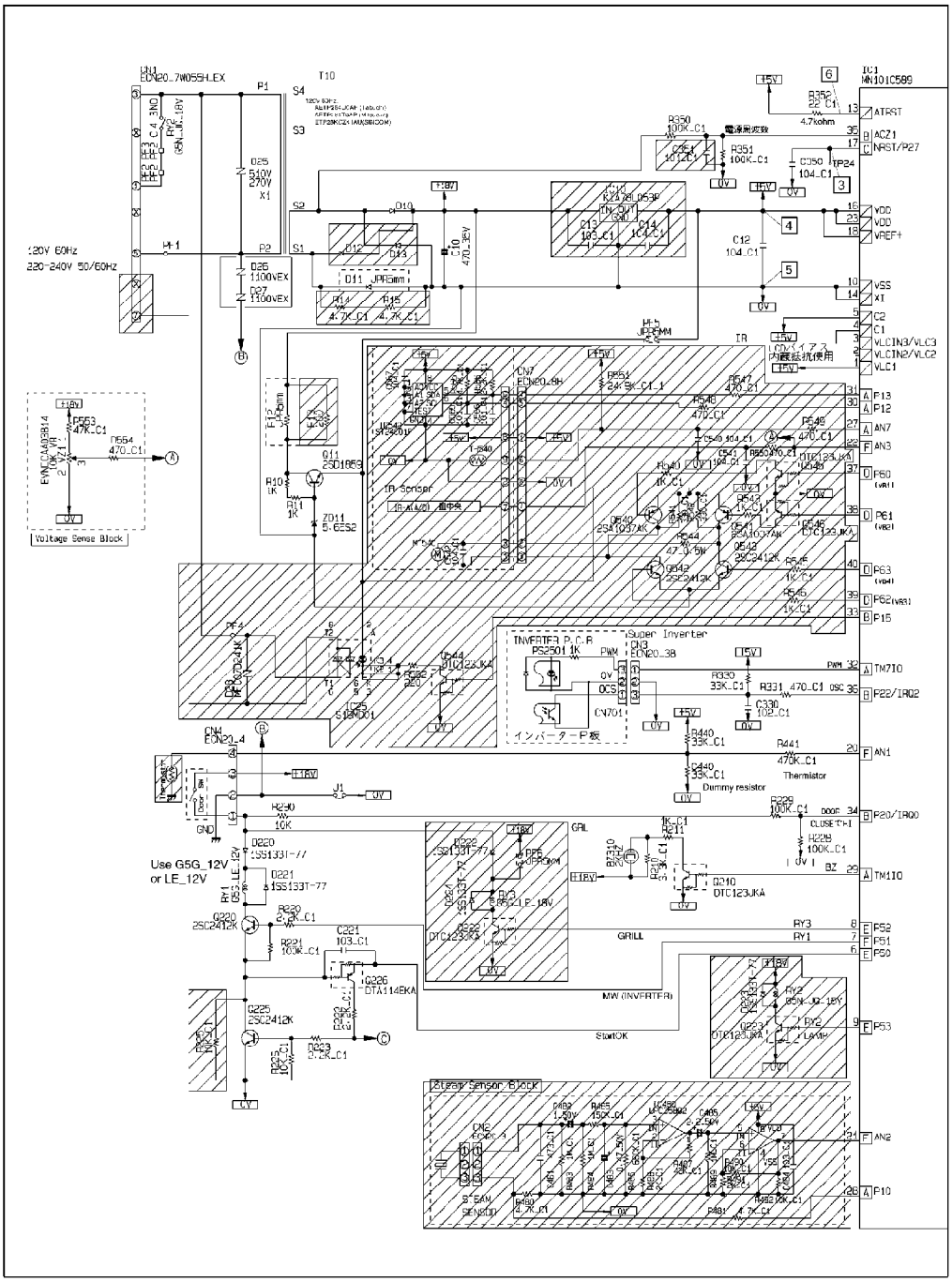

120V 60Hz
220~240V 50/60Hz
Voltage Sense Block
IR Sensor
Super Inverter
INVERTER P.C.B
Use G5G_12V
or LE_12V
GRILL
MW (INVERTER)
StartOK
Steam Sensor Block
STEAM
SENSOR
Thermistor
Dummy resistor
CLOSE-H
BZ
ATRST
ACZ1
NRST/P27
VDD
VDD
VREF+
VSS
XT
C2
C1
VLCIN3/VLC3
VLCIN2/VLC2
VLC1
P13
P12
AN7
AN3
P60
P61
P62
P63
P64
P15
TM710
P22/IRQ2
AN1
P20/IRQ0
TM110
P52
P51
P50
P53
AN2
P10

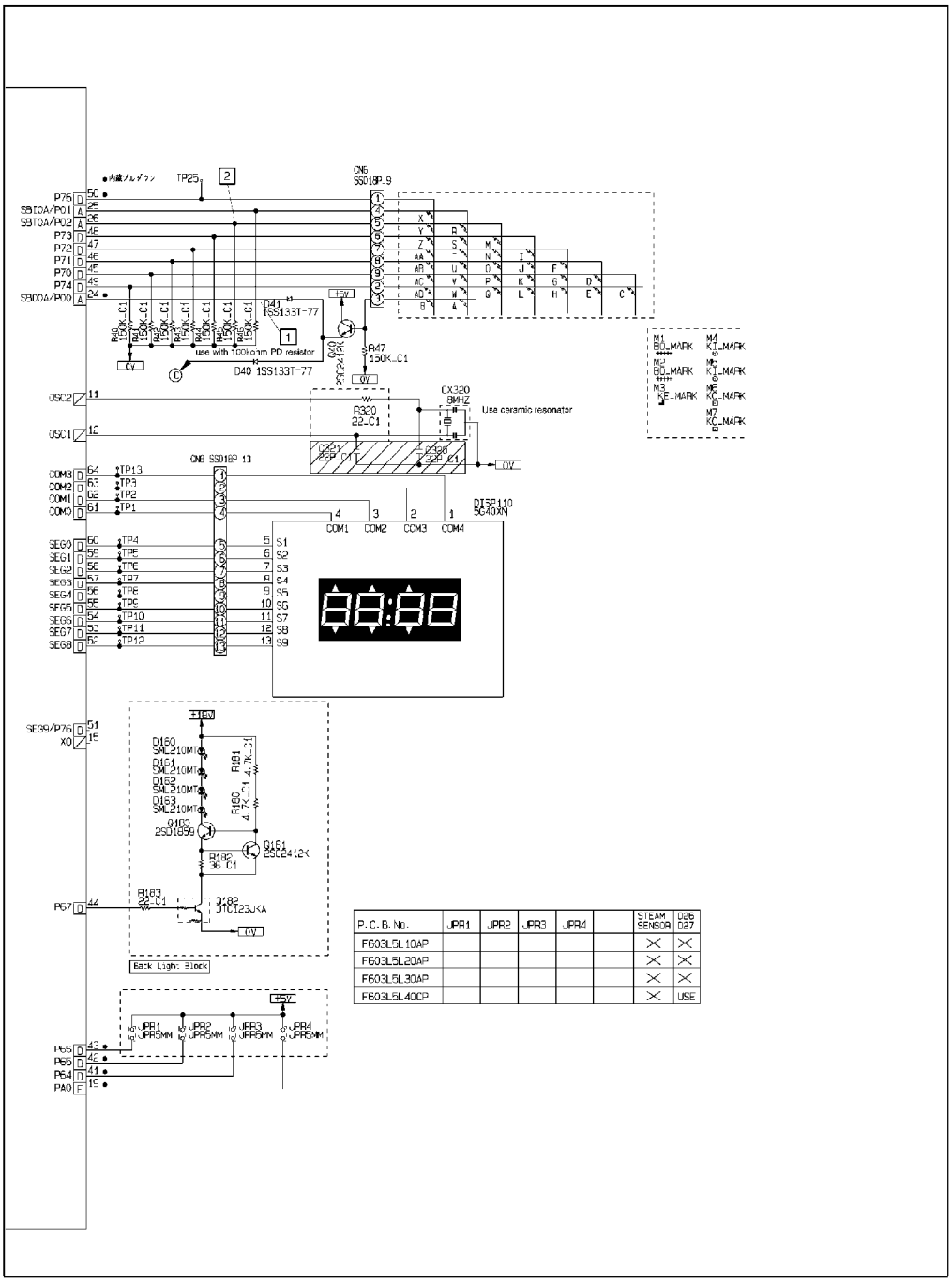



| P. C. B. No. | JPR1 | JPR2 | JPR3 | JPR4 | STEAM SENSOR | D26 D27 |
|---|---|---|---|---|---|---|
| F603L5L00AP | | | | | USE | × |
| F603L6L00CP | | | | | USE | USE |

# 13. DIGITAL PROGRAMMER CIRCUIT (NN-S542, S532, S512)

**SCHEMATIC DIAGRAM**


120V 60Hz
220-240V 50/60Hz
Voltage Sense Block
IR Sensor
Super Inverter
INVERTER P.C.B
Use G5G_12V
or LE_12V
GRILL
MW (INVERTER)
StartOK
Dummy resistor
Thermistor
Steam Sensor Block
IC1
MN101C589
ATRST
NRST/P27
VDD
VSS
XT
VLC1
VLC2/VLC2
VLC3/VLC3
TM710
TM110
P22/IRQ2
P20/IRQ0
AN1
AN2
AN3
AN7
P10
P12
P13
P15
P50
P51
P52
P53
P61
P62
P63




# 14. DIGITAL PROGRAMMER CIRCUIT

**PARTS LIST**

| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| BZ310 | | AEFBTFM571 | BUZZER | 1 | 2.0KHz |
| C221 | | AECUU06F103Z | CHIP CAPACITOR | 1 | 0.01 μF/50V |
| C484 | | AECUU06F103Z | CHIP CAPACITOR | 1 | 0.01 μF/50V (S592SF, S562BF/WF) |
| C351 | | AECUU06C101J | CHIP CAPACITOR | 1 | 100PF/50V |
| C12, C350 | | AECUT06F104Z | CHIP CAPACITOR | 2 | 0.1 μF/25V |
| C330 | | AECUU06R102K | CHIP CAPACITOR | 1 | 1000PF/50V |
| C481 | | AECUU06F473Z | CHIP CAPACITOR | 1 | 0.047 μF/50V (S592SF, S562BF/WF) |
| C10 | | AECETK1V471B | AL CHEM CAPACITOR | 1 | 470 μF/35V |
| C482 | | AECETS1H010B | AL CHEM CAPACITOR | 1 | 1 μF/50V (S592SF, S562BF/WF) |
| C483 | | AECETS1HR47B | AL CHEM CAPACITOR | 1 | 0.47 μF/50V (S592SF, S562BF/WF) |
| C485 | | AECETS1H2R2B | AL CHEM CAPACITOR | 1 | 2.2 μF/50V (S592SF, S562BF/WF) |
| CN1 | | AEEMXH01505W | CONNECTOR | 1 | 5 Pin |
| CN2 | | AEEMMF00703W | CONNECTOR | 1 | 3 Pin (S592SF, S562BF/WF) |
| CN3 | | F03524U00AP | CONNECTOR | 1 | 3 Pin |
| CN4 | | F03535G40XN | CONNECTOR | 1 | 4 Pin |
| CX320 | | AEFOS800MG06 | CERAMIC RESONATOR | 1 | 8.0MHz |
| D10-D13 | | AEDNERA1502 | DIODE | 4 | |
| D40, D220, D221 | | AESS133T-77 | DIODE | 3 | |
| D25 | | AERZ271KD10A | VARSITOR | 1 | |
| D26, D27 | | AERZ102KD10A | VARSITOR | 2 | CPH |
| D180-D183 | | AESQSML210MT | CHIP-LED | 4 | |
| IC1 | | MN101C589DJ | LSI | 1 | |
| IC480 | | AEICUPC358G2 | IC | 1 | S592SF, S562BF/WF |
| Q226 | | AESA14EKE | CHIP DIDI-TRANSISTOR | 1 | |
| Q182, Q210, Q223 | | AESC23JKE | CHIP DIDI-TRANSISTOR | 3 | |
| Q11, Q180 | | 2SD1859TV2Q | TRANSISTOR | 2 | |
| Q40, Q181, Q220, Q225 | | 2SC2412KT146 | CHIP TRANSISTOR | 4 | |
| R211 | | AERJ06J102R | CHIP RESISTOR | 3 | 1K Ω, 1/16W, 5% |
| R226 | | AERJ06J103R | CHIP RESISTOR | 1 | 10K, 1/16W, 5% |
| R490, R492 | | AERJ06J103R | CHIP RESISTOR | 2 | 10K, 1/16W, 5% (S592SF S562BF/WF) |
| R221, R228, R229, R350, R351 | | AERJ06J104R | CHIP RESISTOR | 5 | 100K, 1/16W, 5% |
| R483, R484, R489 | | AERJ06J105R | CHIP RESISTOR | 3 | 1M, 1/16W, 5% (S592SF S562BF/WF) |
| R40-R47 | | AERJ06J154R | CHIP RESISTOR | 8 | 150K, 1/16W, 5% |
| R485 | | AERJ06J154R | CHIP RESISTOR | 1 | 150K, 1/16W, 5% (S592SF S562BF/WF) |
| R488, R491 | | AERJ06J202R | CHIP RESISTOR | 2 | 2K, 1/16W, 5% (S592SF S562BF/WF) |
| R320 | | AERJ06J220R | CHIP RESISTOR | 1 | 22 Ω, 1/16W, 5% |
| R220, R222, R223 | | AERJ06J222R | CHIP RESISTOR | 3 | 2.2K, 1/16W, 5% |
| R210 | | AERJ06J332R | CHIP RESISTOR | 1 | 3.3K, 1/16W, 5% |
| R330, R440, C440 | | AERJ06J333R | CHIP RESISTOR | 3 | 33K, 1/16W, 5% |
| R182 | | AERJ06J360R | CHIP RESISTOR | 1 | 36 Ω, 1/16, 5% |
| R487 | | AERJ06J433R | CHIP RESISTOR | 1 | 43K, 1/16W, 5% (S592SF S562BF/WF) |
| R331, R441, R554 | | AERJ06J471R | CHIP RESISTOR | 3 | 470 Ω, 1/16W, 5% |
| R14, R15, R180, R181, R352 | | AERJ06J472R | CHIP RESISTOR | 5 | 4.7K, 1/16W, 5% |
| R480, R481 | | AERJ06J472R | CHIP RESISTOR | 2 | 4.7K, 1/16W, 5% (S592SF S562BF/WF) |
| R553 | | AERJ06J473R | CHIP RESISTOR | 1 | 47K, 1/16W, 5% |
| R486 | | AERJ06J684R | CHIP RESISTOR | 1 | 680K, 1/16W, 5% (S592SF S562BF/WF) |
| R10, R11, R311 | | AERDY2TJ102T | CARBON RESISTOR | 3 | 1K, 1/4W, 5% |
| R290 | | AERDY2TJ103T | CARBON RESISTOR | 2 | 10K, 1/4W, 5% |
| VZ1 | | AEVTZ6TLT103 | VARISTOR | 1 | 10K Ω |
| RY1 | | AEGG5G1A18 | POWER RELAY | 1 | |

| Ref. No. | | Part No. | Part Name & Description | Pcs/Set | Remarks |
|---|---|---|---|---|---|
| RY2 | | AEBJQ1A18 | POWER RELAY | 1 | |
| T10 | | AETP284U0AP | LOW VOLTAGE TRANSFORMER | 1 | |
| ZD10 | | AESZMTZJ5R6B | ZENER DIODE | 1 | |

ORDER NO. SIMMC 0001002C1
E1

# Service Manual

Microwave Oven

| MODELS | APH | CPH |
|---|---|---|
| | USA | Canada |
| NN-S560BF/WF | O | O |
| NN-S550BF/WF | O | O |
| NN-S540BF/WF | O | |
| NN-L530BF | O | |
| NN-L530WF | O | O |
| NN-L520WF | | O |
| NN-S510WF | | O |

* **RPH Model refer to the last page.**

## Specifications for APH :

| Specifications: / Model: | NN-S560BF/WF | NN-S550BF/WF | NN-S540BF/WF | NN-L530BF/WF |
|---|---|---|---|---|
| Power Source: | *120V AC Single Phase, 60Hz | | | |
| Power Requirement: | 1370W | 1370W | 1370W | 1370W |
| Output(IEC705-88): | 1300W | 1300W | 1100W | 1000W |
| Microwave Frequency: | *2450MHz | | | |
| Timer: | *99min.99sec | | | |
| Outside Dimensions: | *20 ”(518mm)(W)◦ × 16 ”(407mm)(D)◦ × 11”(301mm)(H) | | | |
| Oven Cavity Dimensions: | *14 ”(375mm)(W)◦ × 15 ”(386mm)(D)◦ × 8 ”(225mm)(H) | | | |
| Weight: | *26.5 lbs. (12.0kg) | | | |
| Output power:IEC705-88 Test Procedure | | | | |
| Specifications subject to change without notice. | | | | |

## Specifications for CPH:

| Specifications: / Model: | NN-S560BF/WF | NN-S540BF/WF | NN-L530WF | NN-L520WF | NN-S510WF |
|---|---|---|---|---|---|
| Power Source: | *120V AC Single Phase, 60Hz | | | | |
| Power Requirement: | 1370W | 1370W | 1370W | 1370W | 1370W |
| Output(IEC705-88): | 1200W | 1100W | 1100W | 1100W | 1000W |
| Microwave Frequency: | *2450MHz | | | | |
| Timer: | *99min.99sec | | | | |
| Outside Dimensions: | *20 ”(518mm)(W)◦ × 16 ”(407mm)(D)◦ × 11”(301mm)(H) | | | | |
| Oven Cavity Dimensions: | *14 ”(375mm)(W)◦ × 15 ”(386mm)(D)◦ × 8 ”(225mm)(H) | | | | |
| Weight: | *26.5 lbs. (12.0kg) | | | | |
| Output power:IEC705-88 Test Procedure | | | | | |
| Specifications subject to change without notice. | | | | | |

Panasonic®

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## ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

## WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
   or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
4. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

| | | | |
|---|---|---|---|
| IN U.S.A. (PASC) | Panasonic Services Company<br>50 Meadowland Parkway,<br>Secaucus, New Jersey 07094<br>Attention: Technical Service Division.<br>(201)348-7000 | IN PUERTO RICO (PSC) | PSC<br>San Gabriel Industrial Park<br>65th Infantry Ave. Km.9.5<br>Carolina, Puerto Rico 00985<br>(787)750-4300 |
| | | IN CANADA (PCI) | Panasonic Canada Inc.<br>5770 Ambler Drive, Mississauga,<br>Ontario, L4W2T3<br>(905)624-5010 |

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

# PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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| | (Page) | | (Page) |
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**DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)**

## INVERTER WARNING

**This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current.** **NEW HV**

**IT HAS:**

1. **Very high voltage and high current circuits.**
   **It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.**
2. **Aluminum heat sink is energized with very high voltages and high heat energy.**
3. **Very high voltage may remain in circuitry even when oven is off. High voltage may remain in the capacitors on the board.**

**DO NOT:**

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage may remain in circuit.**

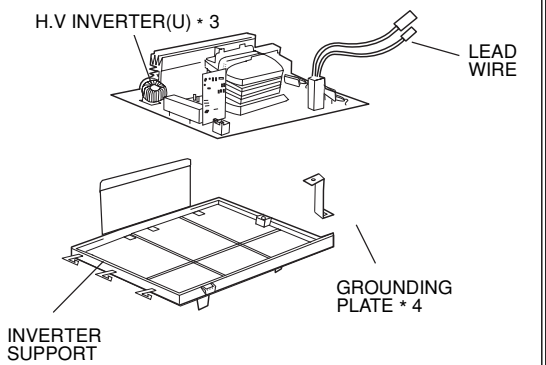
* 2. **Do not touch aluminum heat sink because it is very hot in high voltage and also very hot in high heat energy.**

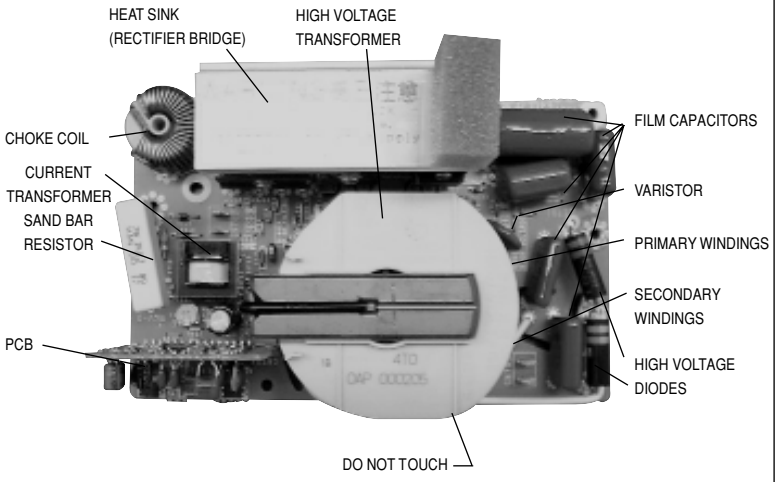
* 3. **Do not try to adjust or tamper with preset volume on the Inverter board because it is very dangerous to adjust without proper test equipment.**

* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

* 5. **For USA only:**
   **Do not try to repair Inverter PCB because it is very dangerous to repair it. Replace as whole High Voltage Inverter Circuit unit and return fully re-packed with original shipping box and shipping materials.**

## INVERTER POWER SUPPLY DIAGRAM



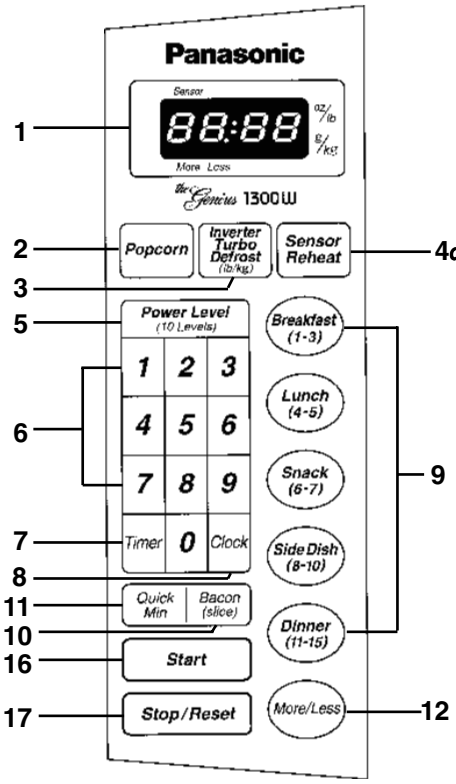



# FEATURE CHART

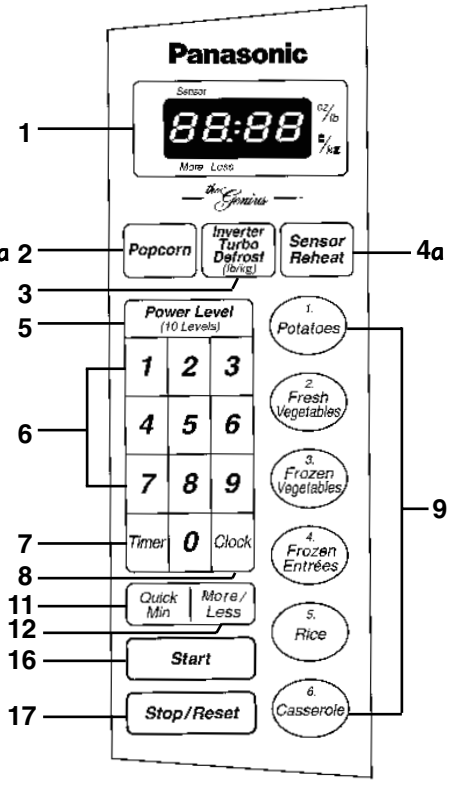
| FEATURE \ MODEL | NN-S560WF | NN-S550WF NN-S540WF NN-S510WF NN-S530WF NN-S520WF |
|---|---|---|
| Three Stage Cooking | ○ | ○ |
| Inverter Turbo Defrost | ○ | ○ |
| Auto Reheat | — | ○ |
| Inverter Auto Cook | — | ○ |
| Sensor Reheat | ○ | — |
| Sensor Cook | ○ | — |
| Quick Min | ○ | ○ |
| Popcorn | ○ | ○ |
| Timer | ○ | ○ |
| Digital Clock | ○ | ○ |

# CONTROL PANEL

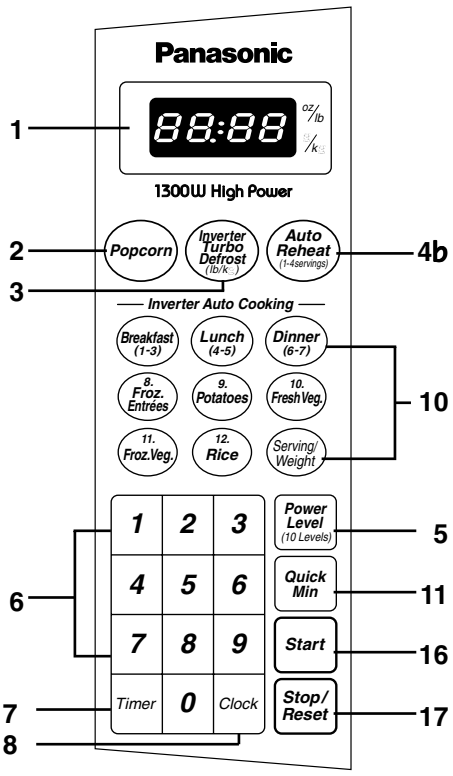
NN-S560(APH)




NN-S560(CPH)

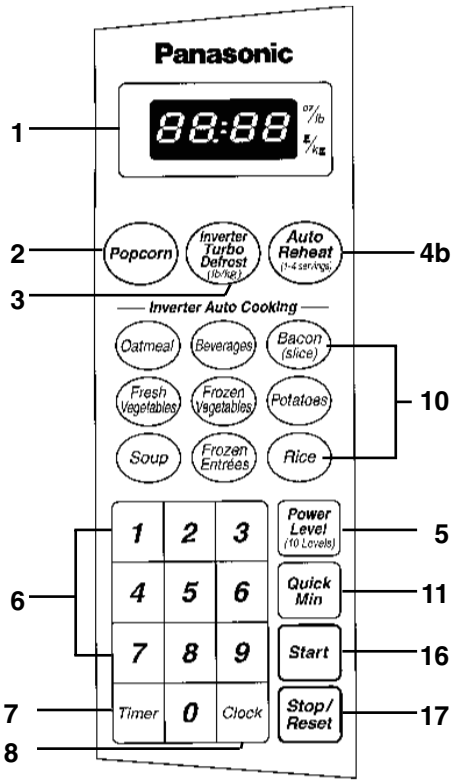



NN-S550

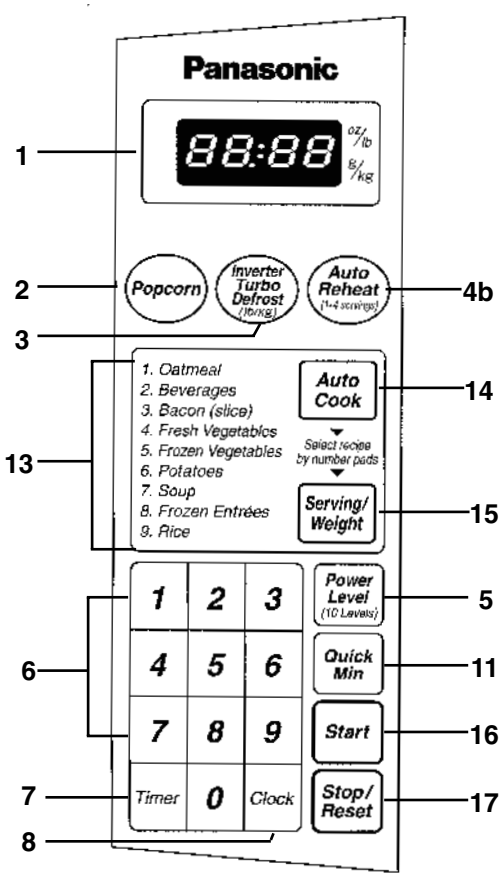


# CONTROL PANEL

NN-S540




NN-L530

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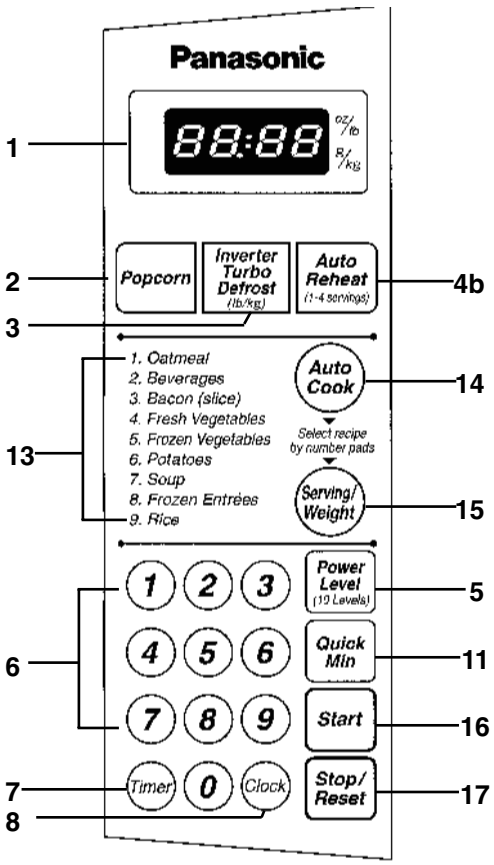
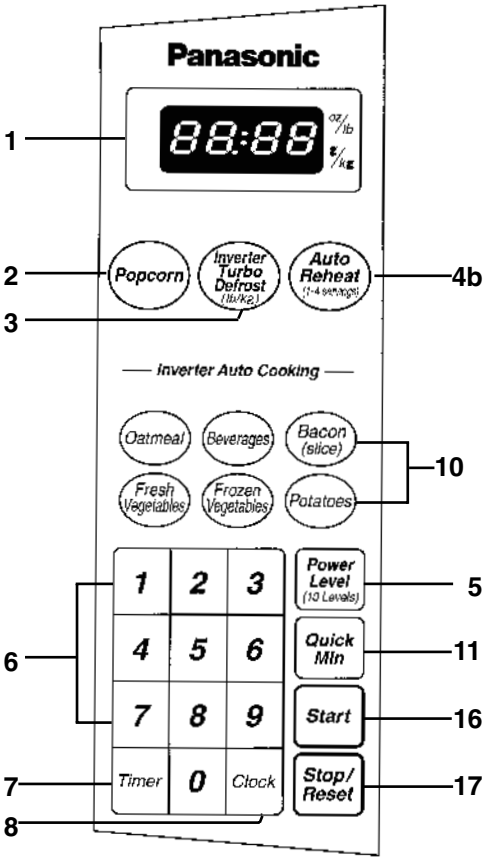



MN-S510




**(1) Display Windows**
**(2) Popcorn Pad**
**(3) Inverter Turbo Defrost Pad**
**(4a) Sensor Reheat Pad**
**(4b) Auto Reheat Pad**
**(5) Power Level Pad**
**(6) Number Pads**
**(7) Timer Pad**
**(8) Clock Pad**
**(9) Sensor Cook Pad**
**(10) Inverter Auto Cooking Pads**
**(11) Quick Min Pad**
**(12) More /Less Pad**
**(13) Cooking Guide**
**(14) Auto Cook Pad**
**(15) Serving/Weight Pad**
**(16) Start Pad**

One tap allows oven to begin functioning. If door is opened or STOP/RESET Pad is pressed once during oven operation, START Pad must again be pressed to restart oven.

**(17) Stop/Reset Pad**

Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day or colon appears on the display window.

# OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

When you pluge the power supply cord into the wall outlet, microwave oven automatically enter into the state of lb / oz. If you want to use g / kg state, please press **Start** pad after pluging the power source.

## 1. To Set Clock

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Plug the power supply cord into wall outlet. | 88.88 |
| 2. Press **Clock** pad. | ☼ ☼ |
| 3. Enter time of day (TOD) by pressing appropriate **Number** pads. | 11☼25 |
| 4. Press **Clock** pad. TOD has now been resistered into the digital programmer circuit and will count up by minutes. | 11. 25 |

## 2. Time Cooking for Two Stage

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Place a water load in the oven. | |
| 2. Press **Power Level** pad once to set High power. (1st stage) | P 10 |
| 3. Set for 5 seconds by pressing **Number** pads. 5 sec.= **5** | . 5 |
| 4. Press **Power Level** pad 6 times to set Medium power. (2nd stage) | P 5 |
| 5. Set for 1 minute by pressing **Number** pads. 1 min.= **1** **0** **0** | 1.00 |
| 6. Press **Start** pad. | . 5 |
| 7. When 1st stage cooking time has elapsed. Oven beeps twice and automatically switches to 2nd stage cooking. | 1.00 |
| 8. When 2nd stage cooking time has elapsed, oven beeps 5 times and shuts off. | Time of day or colon if set appears in the display. |

## 3. Inverter Turbo Defrost

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Inverter Turbo Defrost** pad. | – ☼ |
| 2. Set the weight for 1 lb by pressing **Number** pads. 1 lb = **1** **0** | 1.0 – |
| 3. Press **Start** Pad. | 4.23 |
| 4. Press **Stop/Reset** Pad twice. Oven shuts off. | Time of day or colon if set appears in the display. |

## 4. Inverter Auto Cooking

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Rice** pad twice. | 1 |
| 2. Press **Start** pad. Cooking begins as time counts down. | 15.00 |
| 3. When cooking time has elapsed, oven beeps 5 times and shuts off. | Time of day or colon if set appers in the display. |

## 5. Auto Cook

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Auto Cook** pad. | |
| 2. Press **Number** pads. (Press 3 to select Bacon) | 3 |

| OPERATION | SCROLL DISPLAY |
|---|---|
| 3. Press **Serving / Weight** pad. (Select 4. 6. 10. 14 slices) | ***4*** |
| 4. Press **Start** pad. | ***4.10*** |
| When cooking time has elapsed, Oven beeps 5 times and shuts off. | Times of day or colon if set appears in the display. |

6. Popcorn

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Popcom** pad five times for 3.5 oz serving. (Select 1.75. 2.65. 2.85. 3.0 or 3.5 oz ) | ***3.5*** |
| 2. Press **Start** pad. Cooking begin as times counts down. | ***1.45*** |
| When cooking time has elapsed, Oven beeps 5 times and shuts off. | Time of day or colon if set appears in the display. |

7. Sensor Cooking (NN-S560WFAPH/CPH,S560BFAPH/CPH)

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, place the beaker in the center of the oven. Press **Breakfast** pad twice. | ***– 2*** |
| 2. Press **Start** pad. | |
| 3.The steam sensor detects steam about 1.5 to 4 minutes after the start pad is pressed. Sensor cooking (T1) automatically switches to cooking time(T2). "Sensor" disappears with beep sounds and the remainder of cooking time appears in the display window. NOTE: Cooking time will vary depending on the water temperature, the shape of the beaker or the Power source Voltage. | |
| 4.When cooking time has elapsed, Oven beeps 5 times and shuts off. | Time of day or colon if set appears in the display. |

8. Auto Reheat

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Auto Reheat** pad twice for two servings. | ***2*** |
| 2. Press **Start** pad.Auto Reheat cycle begins time counts down. | ***2.00*** |
| 3.When cooking time has elapsed, Oven beeps 5 times and shuts off. | Time of day or colon if set appears in the display. |

9. Power Level

| Press Power Level | Power Level | Display Window |
|---|---|---|
| once | P 10 (HIGH) | P 10 |
| twics | P 9 | P 9 |
| 3 times | P 8 | P 8 |
| 4 times | P 7 (MED. HIGH) | P 7 |
| 5 times | P 6 (MEDIUM) | P 6 |
| 6 times | P 5 | P 5 |
| 7 times | P 4 | P 4 |
| 8 times | P 3 (MEDIUM-LOW) | P 3 |
| 9 times | P 2 | P 2 |
| 10 times | P 1 (LOW) | P 1 |

10. To set Child satety Lock

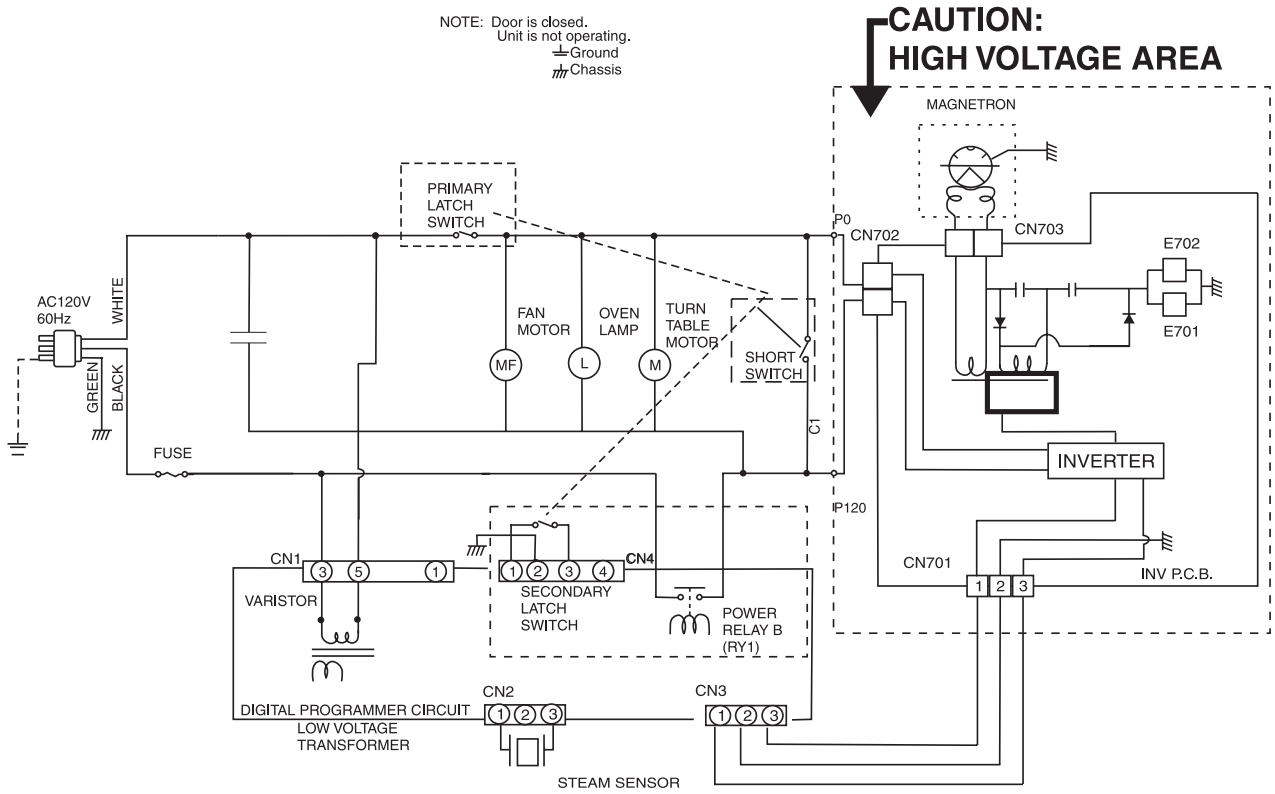
| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Start** pad 3 times continuously. "Child" appears in the display. | ***Child*** |

11. To Reset Child Lock

| OPERATION | SCROLL DISPLAY |
|---|---|
| 1. Press **Start / Reset** pad 3 times continuously. | Time of day or colon if set appears in the display. |

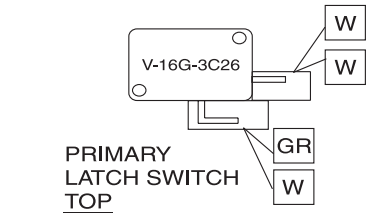
# SCHEMATIC DIAGRAM (APH)

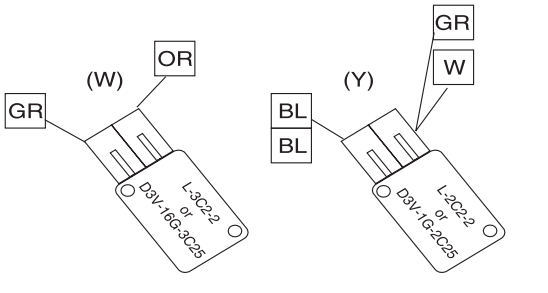
**SCHEMATIC DIAGRAM (APH)**

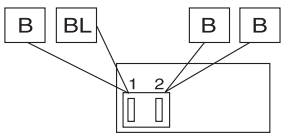


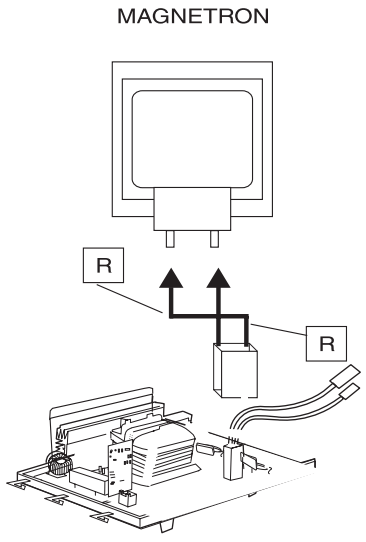

**WIRING DIAGRAM (APH)**

**NOTE: * When replacing, check the lead wire color as shown.**
***Colors shown by ( ) indicate colors of lead wire connector housing.**



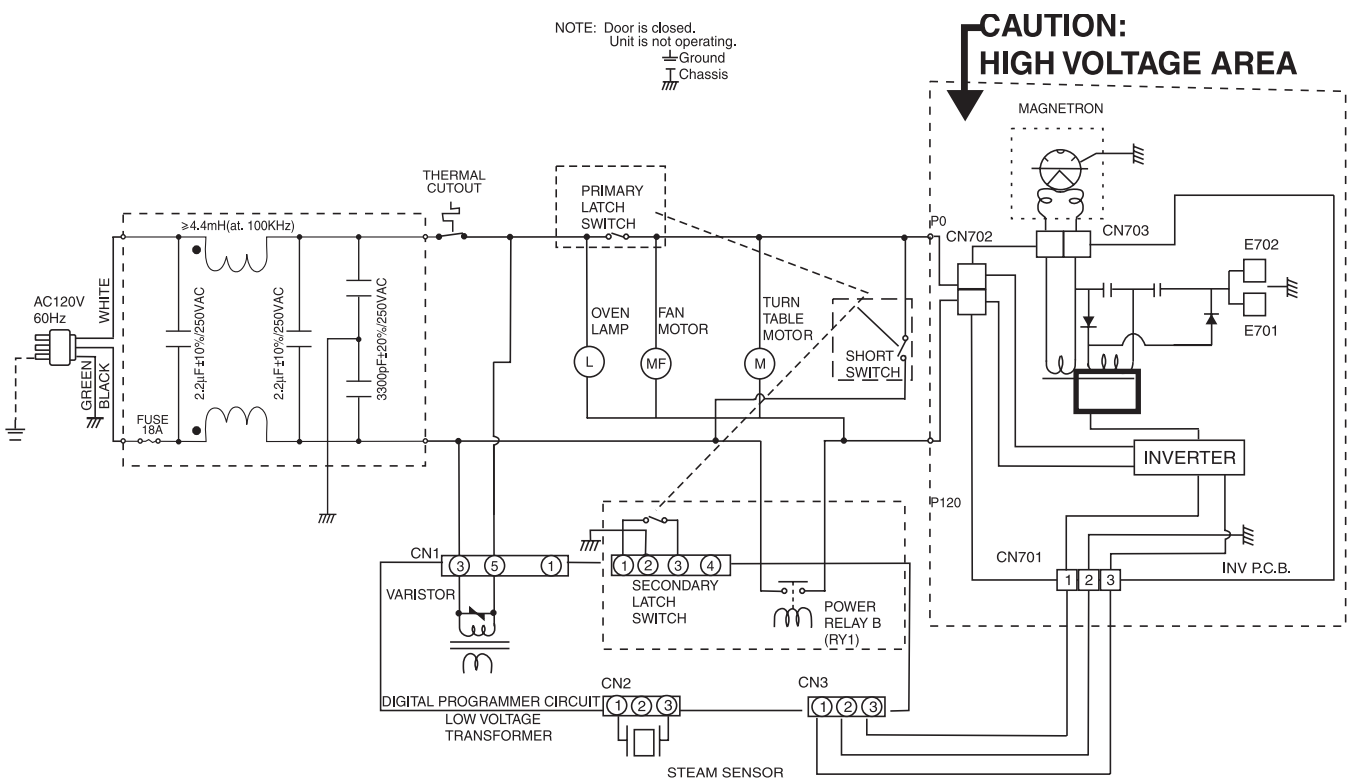



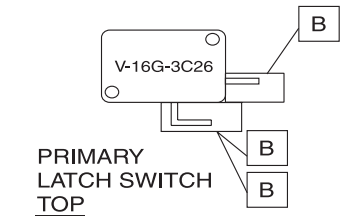

| SYMBOL | COLOR |
|---|---|
| OR | ORANGE |
| BL | BLUE |
| BR | BROWN |
| W | WHITE |
| Y | YELLOW |
| R | RED |
| GR | GRAY |
| B | BLACK |

# SCHEMATIC DIAGRAM (CPH)

**SCHEMATIC DIAGRAM (CPH)**

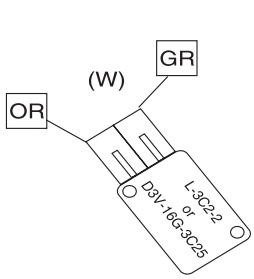



**WIRING DIAGRAM (CPH)**

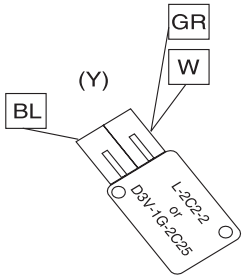



PRIMARY LATCH SWITCH TOP

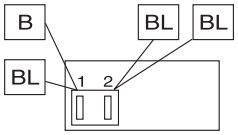
**NOTE: * When replacing, check the lead wire color as shown.**
***Colors shown by ( ) indicate colors of lead wire connector housing.**

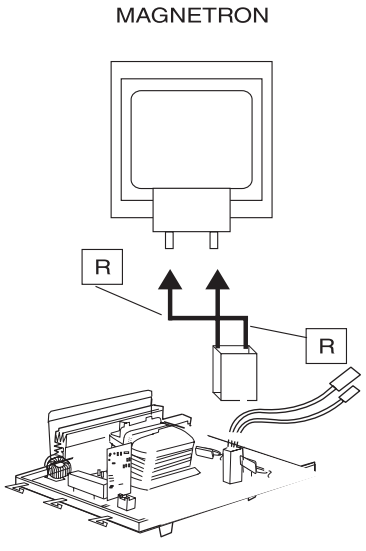



SECONDARY LATCH SWITCH BOTTOM (OUTSIDE)




SHORT LATCH SWITCH BOTTOM (INSIDE)




HIGH VOLTAGE INVERTER

| SYMBOL | COLOR |
|---|---|
| OR | ORANGE |
| BL | BLUE |
| BR | BROWN |
| W | WHITE |
| Y | YELLOW |
| R | RED |
| GR | GRAY |
| B | BLACK |

# DESCRIPTION OF OPERATING SEQUENCE

## 1. Variable power cooking control

The coil of power relay B (RY1) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Low" to "High" power. One complete ON and OFF cycle of power relay B is 22 seconds. The relation between indications on the control panel and the output of the microwave oven is as shown in table.

**NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.**

## 2. Inverter Power Supply Circuit NEW H,V

This Inverter Power Supply Circuit supplies 4,000V DC to the magnetron tube from the line voltage,120v 60Hz AC input. functions as the H.V. transformer, the H.V.capacitor and H.V.Diode.

1. The AC input voLtage 120V 60HZ is rectified to DC voltage immediately.
2. DC voltage will be supplied to the switching devices called IGBT. These devices will be switched ON-OFF by the 20 to 40 kHz PWM. (pulse width modulation) signal from the microcomputer in the DPC.
3. This drives the High voltage transformer to increase up to 2,000V AC and approximately 3V AC by means of transformer.
4. Then the half-wave doubler voltage rectifier circuit, consisting of the HV diodes and Capacitors, generates the necessary 4,000V DC needed for the magnetron.
5. Output power of the magnetron tube is always monitored by the signal output from the current transformer built into the inverter ciruit.
6. Then this signal will be fed back to the microcomputer in the DPC to determine operating conditions and output necessary to control PWM signal to the inverter Power Supply to control output power.

## 3. Inverter Turbo Defrost

When this Auto Control feature is selected and the Start Pad is tapped:

(A) The digital programer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window. Table shows the corresponding cooking times for respective serving by categories.

(B) When cooking time the display window has elapsed, the oven tums off automatically by a control signal from the digital programmer circuit.

### Variable Power Cooking

| POWER SETTING | | OUTPUT POWER(%) APPROX. | ON-OFF TIME OF POWER RELAY B (RY1) | |
|---|---|---|---|---|
| | | | ON (SEC) | OFF (SEC) |
| HIGH | P10 | 100% | 22 | 0 |
| | P9 | 90% | 22 | 0 |
| | P8 | 80% | 22 | 0 |
| MEDIUM-HIGH | P7 | 70% | 22 | 0 |
| MEDIUM | P6 | 60% | 22 | 0 |
| | P5 | 50% | 22 | 0 |
| | P4 | 40% | 22 | 0 |
| MEDIUM-LOW | P3 | 30% | 22 | 0 |
| | P2 | 20% | 15 | 7 |
| | P1 | 10% | 8 | 14 |
| DEFROST | P3 | 30% | 22 | 0 |

### Inverter Turbo Defrost

| SELECTED WEIGHT | COOKING TIME |
|---|---|
| 1.0LB | 4 min.28 sec. |
| 6.0LB | 25 min.00 sec. |

## 4. Sensor Cooking (NN-S560BFAPH/CPH NN-S560WFAPH/CPH)

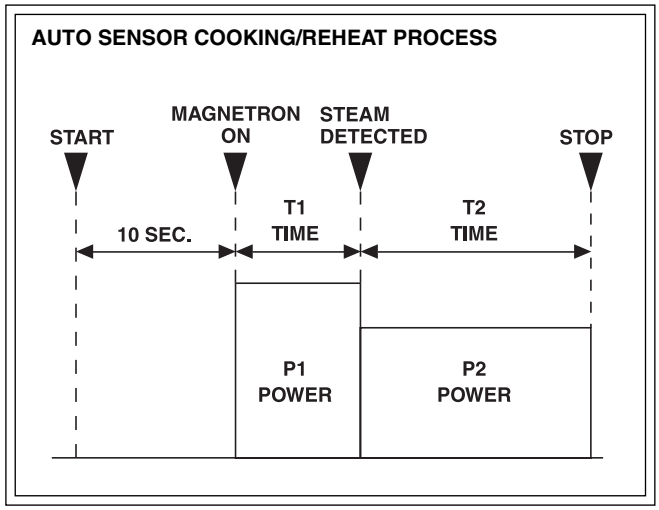
Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.

All that is necessary is to select an Auto Sensor Program before starting to cook.

**Understanding Auto Sensor Cooking**

As the food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the steam sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program Selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

**NOTE: Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult variable Power Microwave cookbook for procedures.**




## Explanation of the Auto Sensor Cooking process

1) During the first 10 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 10 second is subtracted from the T1 time. In other words T1 time starts at the end of the 10 second period.
2) T1 time... The total amount of time it takes the microwave oven to switch to T2 time after the 10 second period.
3) T2 time... When the steam escapes from the cooking container placed in the oven, the steam sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

   Balance of cooking time (T2 time)

   The balance of cooking time which is called T2 time, can be calculated by the following formula.

   T2 time (in sec.)=T1 time X K factor

**NOTE: Remember, the T1 time starts after the 10 second period. The coefficient K is programmed Into the mIcroprocessor memory and they are listed in the following tables along with the P1 and P2 powers.**

**NOTE: When "More" or "Less" pad is selected, the K factor varles resulting In T2 time to be increased or decreased.**

**Example of calculating the T2 time**

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 10 second period, and the Auto program selected is Frozen Vegetable:

T2 = T1 X K

=2 min. and 40 sec. X 0.1

=160 sec. X 0.1

=16 sec.

**Sensor Cooking**

| Category | P1 Power | P2 Power | K Factor Standard |
|---|---|---|---|
| Frozen Vegetables | HIGH | LOW | 0.1 |

## 5. Sensor Reheat (NN-S560BFAPH/CPH,NN-S560WF APH/CPH)

Auto Sensor Reheat is a quick and easy way to reheat refrigerator and room temperature foods.

Simply press the reheat pad. There is no need to select power level and cooking time.

**NOTE: The Auto Sensor Reheat process is same as Auto Sensor Cooking process.**

**Sensor Reheat (All Sensor Modeis)**

| Category | P1 Power | P2 Power | K Factor Standard |
|---|---|---|---|
| Sensor Recheat | HIGH | LOW | 0.1 |

# CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

**CAUTION**
Servicemen should remove their watches whenever working close to or replacing the magnetron.

**1. Check the grounding**

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is inoperative, therefore, to make sure it is grounded properly before beginning repair work.

**2. Inverter Warnings** **NEW H.V.**

**DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)**

This High Voltage Inverter Power Supply circuit supplies very high voltage and very high current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair. As you can see, it looks like a TV flyback transformer, however the current is extremely large and so danger exists because of its high current and high voltages.

The aluminum heat sink is also energized with high voltage (HOT), so do not touch when AC input terminal is connected to the power line because one of the IGBT switching power devices (Collector) is directly connected to the Aluminum heat sink.

The Aluminum heat sink may be HOT from heat energy; therefore, extreme care should be taken during servicing and replacing.

**WARNING OF INVERTER POWER SUPPLY (U) GROUNDING**

Check the High Voltage Inverter Power Supply circuit grounding. This High Voltage Inverter Power Supply circuit board must have a proper chassis ground by the grounding bracket to the chassis ground; otherwise, this H.V. Inverter circuit board will expose very high voltage and cause extreme DANGER! Be sure to have proper grounding by the grounding plate and screws.

**WARNING OF DISCHARGING HIGH VOLTAGE CAPACITORS**

Warning about the electric charge in the high voltage capacitors. For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the Inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please make sure to touch chassis ground side first then short to the output terminals.

**WARNING**

There is high-voltage present, with high-current capabilities in the circuits of the primary, and secondary windings, choke coil and heat sink of the Inverter. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

**WARNING**

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

**3. When parts must be replaced, remove the power plug from the outlet.**

**4.When the 18 Amp fuse is blown due to the operation of short switch:**

**WARNING**

When the 18 Amp. fuse if blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also replace power relay B (RY1) when the continuity check reads shorted contacts (1-2).

(A) This is mandatory. Refer to “Measurements and Adjustments” for these switches.

(B) When replacing the fuse, confirm that it has the appropriate rating for these models.

(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

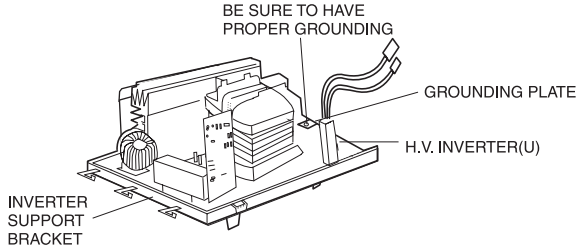
**5.Avoid inserting nails, wire, etc. through any holes in the unit during operation.**

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

MAGNETRON FILAMENT TERMINAL

INSULATED HANDLE SCREWDRIVER

Touch chassis side first then short to the terminal of the magnetron filament terminal.



**6.Confirm after repair**

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.

(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.

(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage.)

**CAUTION**

**MICROWAVE RADIATION**

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

**IMPORTANT NOTICE** **NEW H.V.**

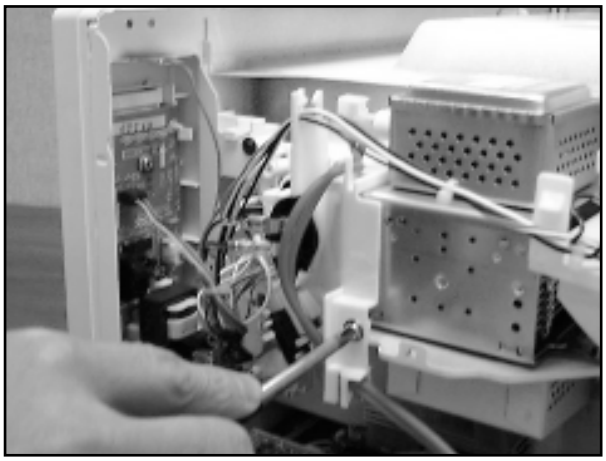
1. The following components have potentials above 250V while the appliance is operating..
   * Magnetron
   * High voltage transformer (Located on Inverter (U))
   * High voltage diodes (Located on Inverter (U))
   * High voltage capacitors (Located on Inverter (U))

   Pay special attention on these portions.
2. When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm$^2$. After repair or exchange, it is very important to check if magnetron and the door hinges are correctly fixed.

# DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

### 1. Magnetron

(A) Discharge the high voltage capacitors, as mentioned and shown on page 11.
(B) Remove 1 screw holding air guide c to magnetron.
(C) Disconnect 2 high voltage lead wires from magnetron filament terminals.
(D) Remove 4 screws holding the magnetron.
NOTE: After replacement of the magnetron, tighten mounting screws in an X pattern, properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

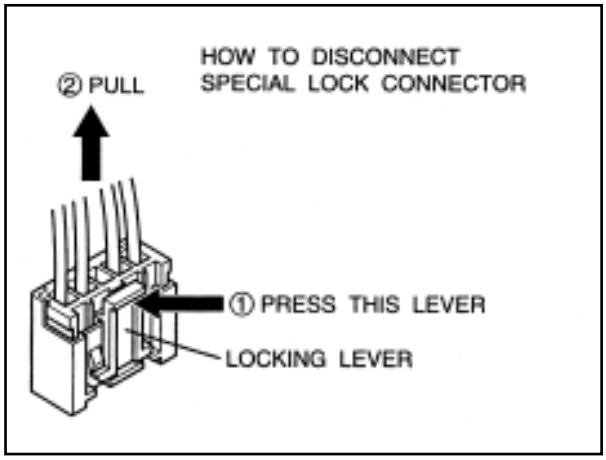


**CAUTION**

When replacing the magnetron, be sure the antenna gasket is in place.

### 2. Digital Programmer Circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Disconnect all connectors from D.P.C.
(B) Slide the escutcheon base upward slightly.
(C) Remove 1 screws holding DPC

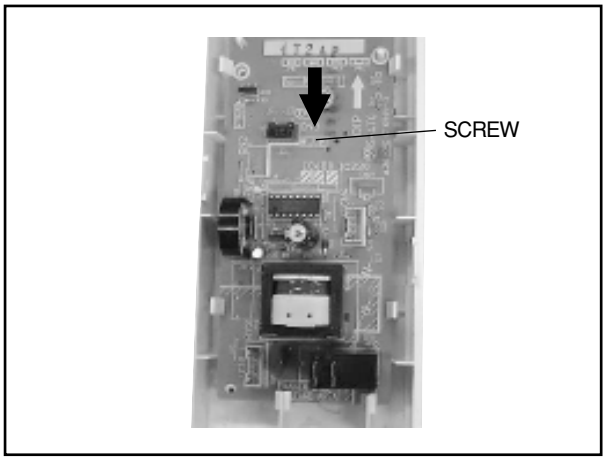



**To replace membrane key board**

(F) Push the upper part of key board (display window portion) from back of escutcheon base and peel off escutcheon sheet and membrane key board completely from escutcheon base.
NOTE: 1. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal.
2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.
3. Alignment position of membrane key board is as follows;
Membrane key board: Right and upper edges
Escutcheon sheet: Right and upper edges

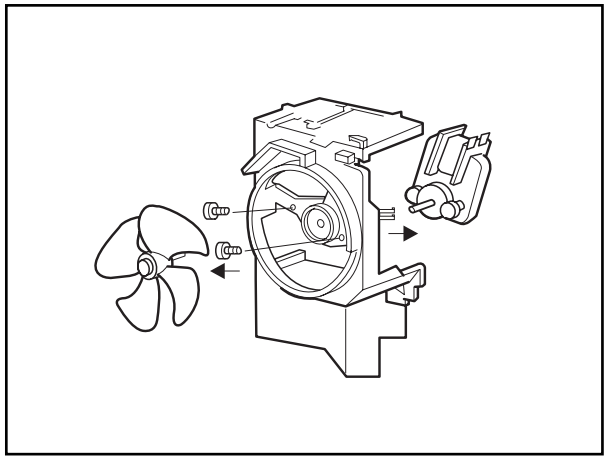
### 3. Low voltage transformer and/or power relays (RY1, RY2)

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.
(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.




### 4. Fan motor

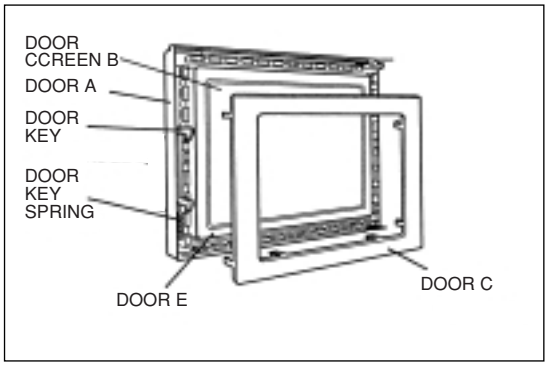
(A) Disconnect 2 lead wires from fan motor terminals.
(B) Remove 1 screw at located on oven attaching orifice assembly.
(C) Remove orifice assembly/Inverter power supply (U) from oven assembly. (Refer page 15)
(D) Remove fan blade from the fan motor shaft by pulling it straight out.
(E) Remove 2 screws holding fan motor to orifice.
(F) Separate the fan motor from the orifice assembly by freeing 2 catch hooks on the orifice assembly.



### 5. Door assembly

(A) Remove door C from door E by carefully pulling outward starting from upper right hand corner using a flat blade screwdriver.
(B) Separate door E from tabs on door A and remove door A.
(C) Open Door E at the opening angle of approximately 10° (Note: The door cannot be removed if the opening angle is greater than 10°).
(D) Remove the door from its hinges by pushing the door's lower hinge pin upward and out.
(E) Remove door screen B from door A.
(F) Remove door key and door key spring.
(G) When reassembling door hold door E at the opening angle of approximately 10°.
(H) Place the door's lower hinge pin into the bottom hinge hole.
(I) Use your left index finger to support the door's lower hinge pin while guiding the door's upper hinge pin into the top hinge hole.
(J) Lower your finger to seat the door onto the hinges.
(K) Replace other components.
(L) **Door alignment is crucial. If door is misaligned, apply pressure until alignment is achieved.**

**After replacement of the defective component parts of the door, reassemble, install, and perform microwave leakage test.**



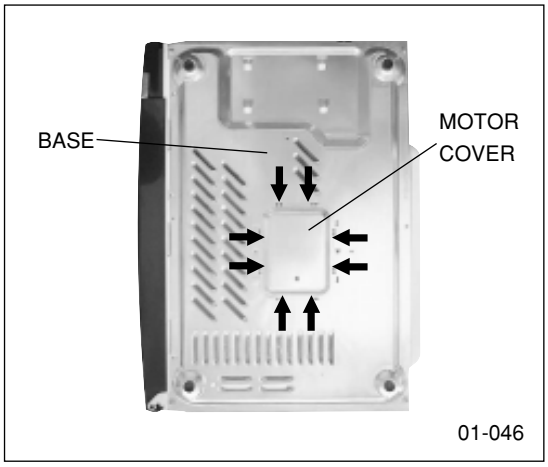

### 6. Turntable motor

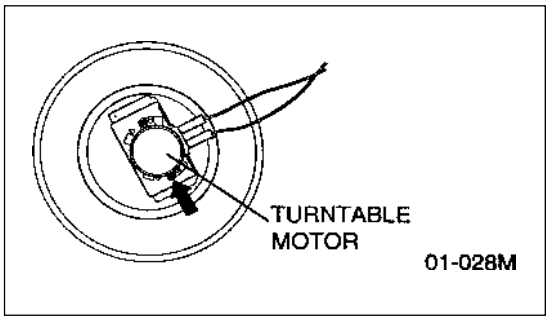
(A) Remove the motor cover by breaking off at the 8 spots indicated by arrows with a cutter or the like. (See Figure)

NOTE: After breaking off the motor cover, make sure that cut-off portions are properly trimmed off or bend to inside so that no sharp edge will expose to outside.

(B) Disconnect 2 lead wires connected to the turntable motor.
(C) Remove the turntable motor by removing 1 screw.

NOTE: After reinstalling the new turntable motor and reconnecting the two lead wires, reinstall the motor cover by rotating it around 180 , tucking the tabs under the base into the 2 provided slots, then screw the single tab to the base using a 4mm X 6mm screw (not provided).

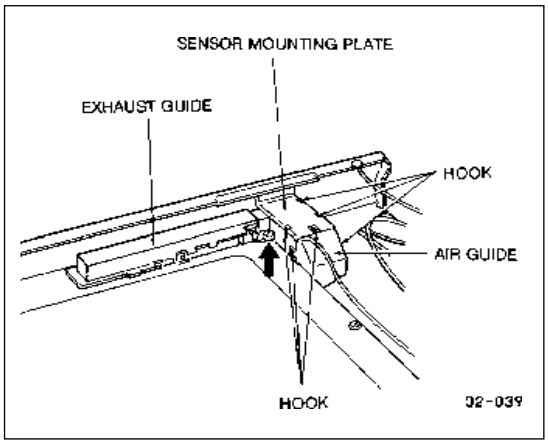


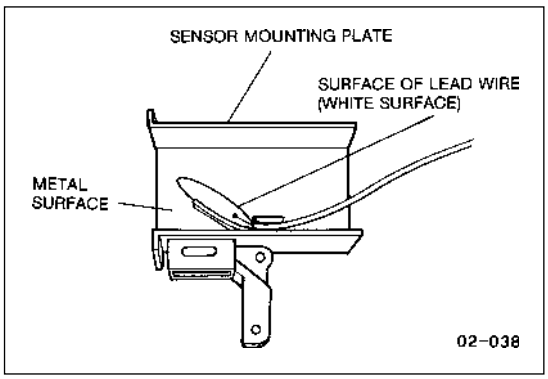




### 7. Steam Sensor

(A) Remove 1 screw holding steam sensor unit. (indicated by arrows)
(B) Disconnect CN2 connector from digital programmer circuit board.
(C) Remove exhaust guide from steam sensor unit.
(D) Remove catch hooks on sensor mounting plate and air guide.
(E) Remove steam sensor from sensor mounting plate.

NOTE: When installing the steam sensor, make sure that the direction of steam sensor is as shown in figure.



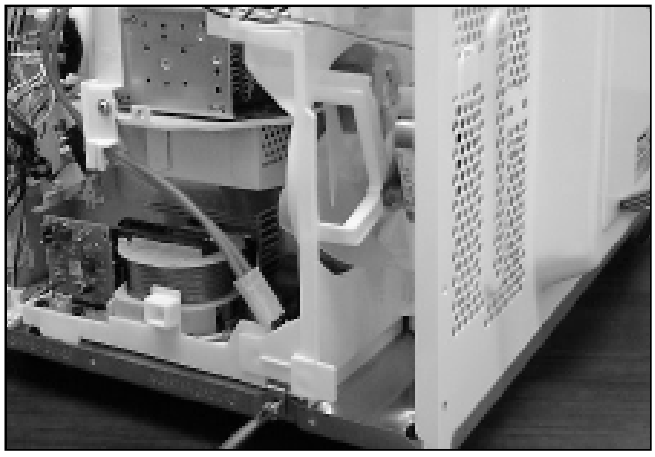
## 8. Inverter Power Supply (U)

**CAUTIONS WHILE REPLACING INVERTER POWER SUPPLY (U)**

1. Make sure to leave the grounding plate in its place.
2. Make sure to securely tighten grounding screw from the bottom of chasis (base).
3. Securely connect 3 lead wire connectors.
4. Make sure the heat sink has enough space (gap) from the oven. Take special care not to touch any lead wire to the aluminum heat sink because it is hot.

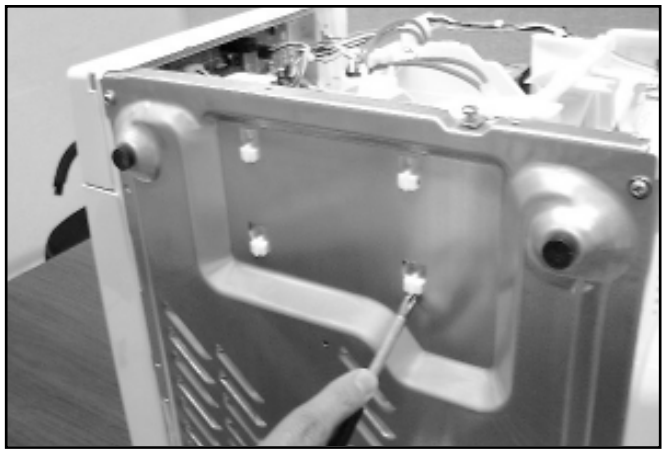
1. Take off outer panel.

2. Remove screw

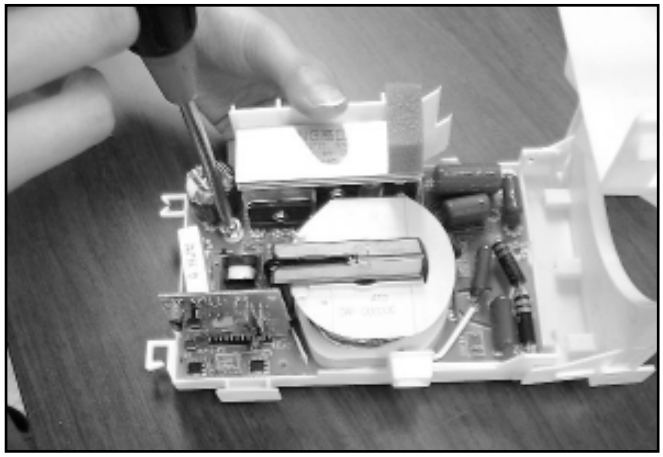


3. Remove screw
4. Disconnect all wires from inverter. Detach turntable wires from inverter bracket.

5. Remove screw and slide oriffice toward you, then lift up and out.



6. Slide four locking of oriffice at the bottom of the base slightly



7. Remove 2 screws holding inverter to inverter bracket.

8. Replace inverter and reassemble to inverter bracket A.
9. Retighten 2 screw
10. Slide and place assembly to the correct location of a completed unit.
11. Push Inverter Assembly until locking tabs are locked.
12. Retighten inverter screws and orifice screws.
13. Reconnet all wires to correct location and redress turntable wires.

# COMPONENT TEST PROCEDURE

**CAUTION** NEW. H.V.

1. High voltage is present at the high voltage terminal of the High Voltage Inverter (U) including aluminum heat sink during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

**1. Primary Latch Switch, Secondary (Secondary Latch Switch and Power Relay B) Interlocks.**

(A) Unplug the lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
(B) Unplug lead connectors to Primary Latch Switch and Secondary Latch Switch.
(C) Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
Normal continuity readings should be as follows.

| | Door Closed | Door Opened |
|---|---|---|
| Primary Latch Switch | 0 Ω (close) | ∞ Ω (open) |
| Secondary Latch Switch | 0 Ω (close) | ∞ Ω (open) |
| Power Relay B | ∞ Ω (open) | ∞ Ω (open) |

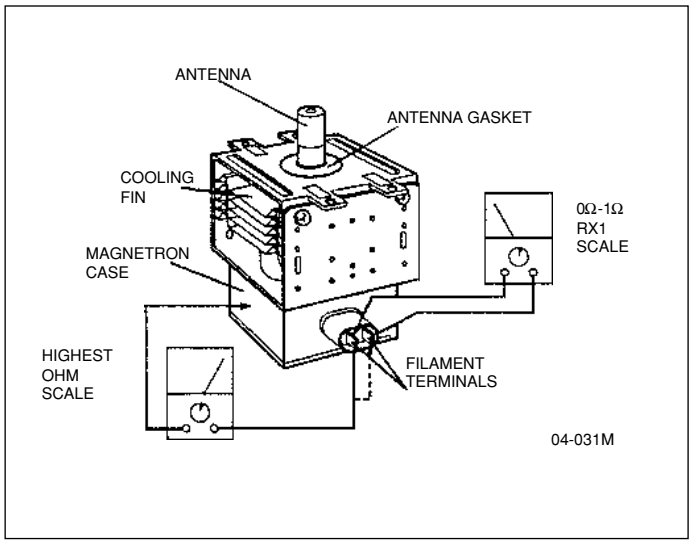
**2. Short Switch & Monitor**

(A) Unplug lead wires from Inverter Power Supply (U) primary terminals.
(B) Connect test probes of ohm meter to the disconnected leads which were connected to Inverter Power Supply (U).
(C) Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
Normal continuity readings should be as follows.

| Door Opened | Door Closed |
|---|---|
| 0 Ω | ∞ Ω |

**3. Magnetron**

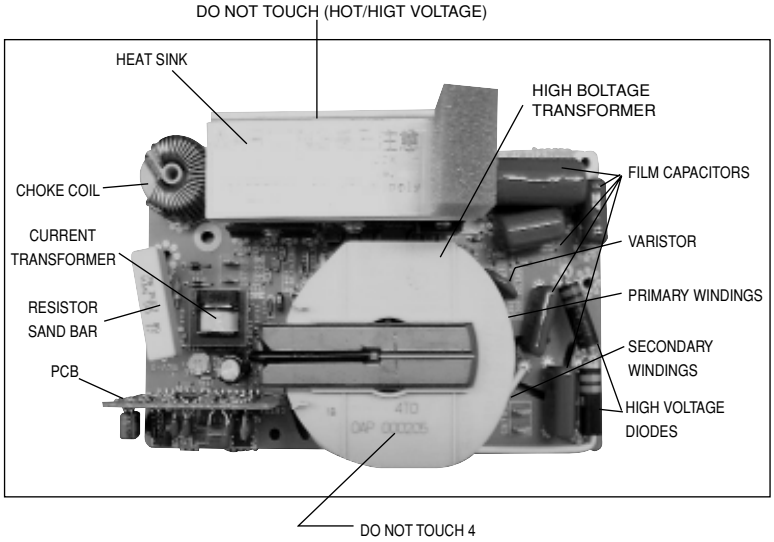
Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.




**4. Membrane key board (Membrane switch assembly)**

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

**5. Inverter Power Supply (U)for USA only**
**DO NOT try to REPAIR this H.V. Inverter power supply (U).Replace as whole H.V. Inverter(U) Unit.**




DANGER HIGH VOLTAGE

Test if failure codes of H97 or H98 appears by doing the following procedure. It is recommended to use an AC line input current Ampere meter for testing.

Test 1

A. Program DPC.
   1. Tap Clock
   2. Tap TIMER
   3. Tap START
   4. Tap POWER LEVEL
B. Place 1 liter of water load into oven cavity.
C. Unplug 2 pin H.V. lead wire connector CN703 from magnetron tube.
D. Program oven at High power for 1 minute and press start.
   1. After approximately 15 seconds, oven displays H98 and stops oven.
   2. During oven operation, input current is approximately 1.0 to 1.7A. If both 1 and 2 are OK, please proceed to test 2.

| | INPUT AMPERE | FAILURE CODE |
|---|---|---|
| Unplug CN703 | 1.0 to 1.7A | H98 |

.

Test 2.

Continued from Test 1
A. Unplug 3 pin connector, CN701
B. Set oven at High power for 1 minute and start.
   1. After approximately 27 seconds, oven displays H97 and stops oven.
   2. During oven operation, input current is approximately 0.4 to 0.8A

| | INPUT AMPERE | FAILURE CODE |
|---|---|---|
| Unplug CN701 | 0.4 to 0.8A | H97 |

If both 1 and 2 are OK, the Inverter Power Supply (U) can be determined OK.

## 6. Steam Sensor and Digital Programmer Circuit

In order to determine if the steam sensor function of the digital programmer circuit is in working order or not, do the following test.

1) Place a water load (150 cc) in the oven.
2) Tap Sensor Reheat pad.
3) Tap Start Pad.
4) Steam Sensor detects steam about 1.5 to 4 minutes after the Start Pad is tapped.
5) T1 time cooking automatically switches to remaining time cooking (T2).
6) The remaining cooking time (T2) appears in display window. If the following cooking time appears, Steam Sensor function is normal.

| T1 TIME | T2 TIME (Remaining cooking time) |
|---|---|
| 1 Min. 30 Sec.~4 Min. | 8 Sec.~23 Sec. |

# MEASUREMENTS AND ADJUSTMENTS

**WARNING**

* For continued protection against radiation hazard, replace only with identical replacement parts(For touch models Part No. ANE6142-1450,Type No. V-16G-3C26-M for Primary latch switch; Part No. A61425180AP, Type No. L-3C2-2 for Secondary latch switch; Part No. A61785180AP, Type No. L-2C2-2 for short switch and Part. No. AEG5J1EG12B/AEG5J1EG18B, Type No. G5J-1-TP for power relay B(RY1))
* When the 18 Amp. fuse is blown due to the operation of the short switch, you must replace power relay B. Primary latch switch and the short switch. Then follow the installation procedures below.
* Interlock switch replacement－In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
* Refer to schematic diagram to ensure proper connection.

## 1. Adjustment of Primary latch switch, Secondary latch switch and Short switch.

(A) When mounting Primary latch switch,Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in table.

**NOTE: No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.**

(B) When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

(C) Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.

## 2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

*1 liter beaker *Glass thermometer

*Wrist watch or stopwatch

**NOTE: Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.**

(A) Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the beaker's temperature. (recorded as T1).

(B) Place the beaker on the center of glass cook plate. Set the oven for High power and heat it for exactly one minute.

(C) Stir the water again and read the temperature of the beaker. (recorded as T2).

(D) The normal temperature rise at High power position for each model is as shown in table.

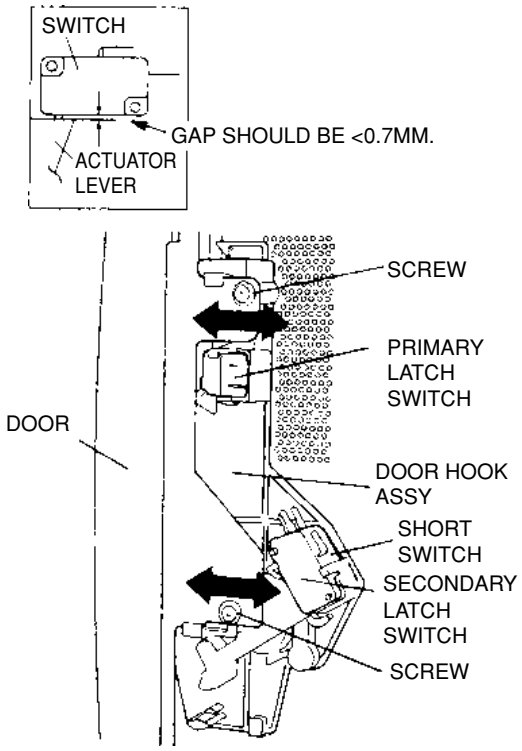



**TABLE (1L-1min. test)**

| RATED OUTPUT | TEMPERATURE RISE |
|---|---|
| 1000~1100W(IEC705-88) | Min. 16.2°F(9°C) |
| 1200~1300W(IEC705-88) | Min. 17.6°F(9.5°C) |

# PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

**WARNING**

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform PASC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. Government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

## 1. Equipment

*Electromagnatic radiation monitor
*Glass thermometer 212 °F or 100 °C
*600cc glass beaker

## 2. Procedure for measuring radiation leakage

*Note before measuring.*

*(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.*

*(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).*

*(3) Leakage with the outer panel removed ..... less than 5mW/cm² .*

*(4) Leakage for a fully assembled oven with door normally closed ..... less than 2mW/cm² (1mW/cm² for Canada).*

*(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ..... less than 2mW/cm² .*

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20° ± 5 °C (68° ± 9 °F) water in a beaker which is graduated to 600cc, and place in the center of the oven.

(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.

(D) Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

**(1) Measurement with the outer panel removed.**

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measur ing around the magnetron.

**WARNING**

Avoid contacting any high voltage parts.

**(2) Measurements with a fully assembled oven.**

After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

## 3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

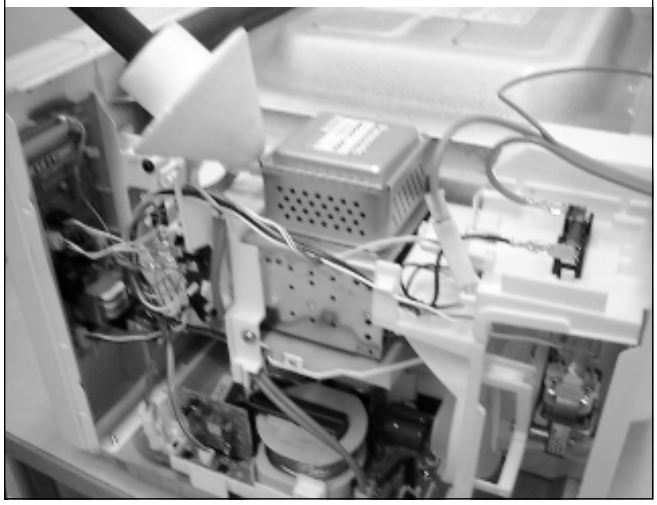
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

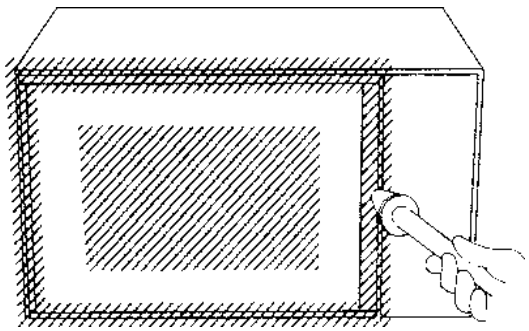
(B) Should the radiation leakage be more than 2 mW/cm² (1mW/cm for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PASC, PSC or PCI.

## 4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

**WARNING**

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.





01-035

MOVE PROBE ALONG SHADED AREA(////)AROUND EXHAUST OPENINGS(as shown)AND AROUND AIR INLET OPENING

# TROUBLESHOOTING GUIDE

## CAUTION

1. Check grounding before checking for trouble.
2. Be careful of high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer,disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter. When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be damaged or the connector cannot be removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. 120V AC is present on the digital programmer circuit (Terminals of power relay's and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

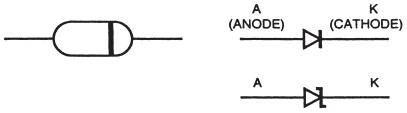
First of all operate the microwave oven following the correct operating procedures in order to find the exact cause of any trouble.

| | SYMPTOM | CAUSE | CORRECTIONS |
|---|---|---|---|
| 1. | Oven is dead.<br>Fuse is OK.<br>No display and no operation at all. | 1. Open or loose lead wire harness<br>2. Open thermal cutout (Cavity)<br>3. Open low voltage transformer<br>4. Defective DPC | Check fan motor when thermal cutout is defective. |
| 2. | No display and no operation at all.<br>Fuse is blown. | 1. Shorted lead wire harness<br>2. Defective primary latch switdh (NOTE 1)<br>3. Defective short switch (NOTE 1)<br>4. Defective Inverter Power Supply (U) (Page 18) | Check adjustment of primary, secondary latch switch and short switch including door. |
| | | NOTE 1: All of these switches must be replaced at the same time.<br>Check continuity of power relay (RY1)'s contacts (between 1 and 2) and if it has continuity, replace power relay B (RY-1)'s. | |
| 3. | Oven does not accept key input(Program) | 1. Key input is not insequence<br>2. Open or loose connection of membrane key pad to DPC (Flat cable)<br>3. Shorted or open membrane key board<br>4. Defective DPC | Refer to operation procedure.<br><br><br>Refer to DPC troubleshooting. |
| 4. | Fan motor turn on when oven is plugged in with door closed. | 1. Misadjustment or loose wiring of secondary latch switch<br>2. Defective secondary latch switch | Adjust door and latch switches. |
| 5. | Timer starts count down but no microwave oscillation.<br>(No heat while oven lamp and fan motor turn on) | 1. Off-alignment of latch switches<br>2. Open or loose connection of high voltage circuit especially magnetron filament circuit<br>NOTE: Large contact resistance will bring lower magnetron filament voltage and causing magnetron to lower output and/or be intermittent.<br>3. Defective high voltage component<br>HV Inverter Power Supply (u)<br>Magnetron<br>4. Open or loose wiring of power relay B (RY-1)<br>5. Defective primary latch switch<br>6. Defective DPC or power relay B (RY-1) | Adjust door and latch switches.<br><br><br><br><br><br>Check high voltage component according to component test procedure and replace if it is defective.<br><br><br>Refer to DPC troubleshooting<br>Adjust door and latch switches. |
| 6. | Oven can program but timer does not start countdown. | 1. Open or loose wiring of secondary latch switch<br>2. Off-alignment of secondary latch switch<br>3. Defective secondary latch switch | |
| 7. | Microwave output is low. Oven takes longer time to cook food. | 1. Decrease in power source voltage<br>2. Open or loose wiring of magnetron filament circuit.(Intermittent oscillation)<br>3. Aging change of magnetron | Consult electrician |
| 8. | Fan motor turns on and turntable rotates when door is opened. | 1. Shorted primary latch switch | |

| | | | |
|---|---|---|---|
| 7. | Oven does not operate and return to plugged in mode as soon as start pad is pressed. | 1. Defective DPC | Check tighten screws on escutcheon base bracket, D.P.C. board. |
| 8. | Loud buzzing noise can be heard. | 1. Loose fan and fan motor | |
| 9. | Turntable motor does not rotate. | 1. Open or loose wiring of turntable motor<br>2. Defective turntable motor | |
| 10. | Oven stops operation during cooking. | 1. Open or loose wiring of primary and secondary latch switch<br>2.Operation of thermal cutout | Adjust door and latch switches. |
| 11. | Oven returns to plugged in mode after 10 seconds elapses on the Auto sensor cooking mode. | 1.Open or loose wiring of sensor terminal from DPC<br>2.Open steam sensor<br>3.Defective DPC | |

# HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

**Diode**



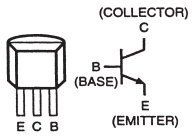

| | FORWARD | REVERSE |
|---|---|---|
| A-K | SMALL | ∞ |

**Transistor**

**NPN Transistor**

**2SC·····**

**2SD·····**

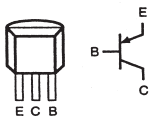



| | FORWARD | REVERSE |
|---|---|---|
| B-E | SMALL | ∞ |
| B-C | SMALL | ∞ |
| C-E | ∞ | ∞ |

**PNP Transistor**

**2SA·····**

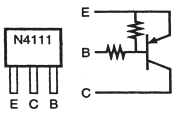
**2SB·····**




| | FORWARD | REVERSE |
|---|---|---|
| B-E | SMALL | ∞ |
| C-B | SMALL | ∞ |
| C-E | ∞ | ∞ |

**Digital Transistor**

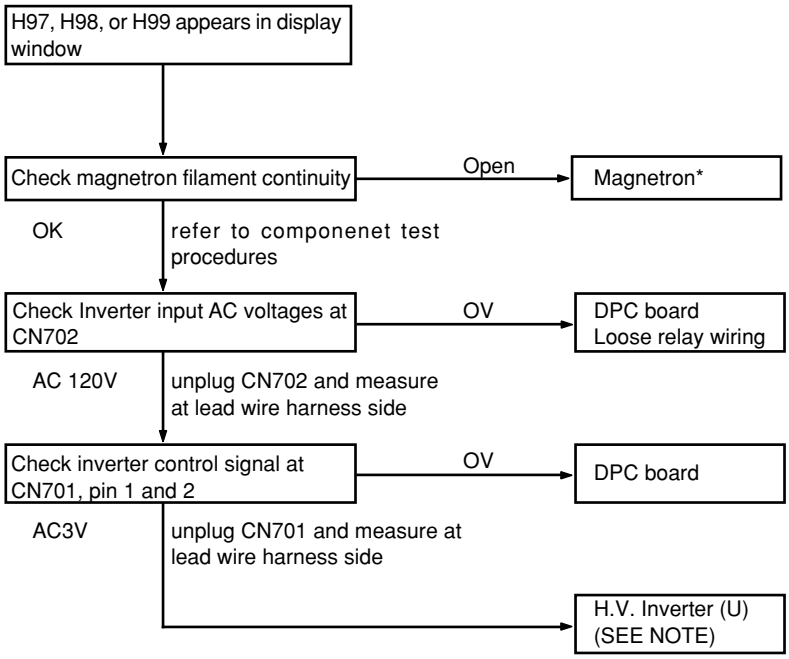
**PNP Transistor**




| | FORWARD | REVERSE |
|---|---|---|
| E-B | 10kΩ～30kΩ | 10kΩ～30kΩ |
| C-B | 50kΩ～90kΩ | ∞ |
| C-E | 40kΩ～80kΩ | ∞ |

## Troubleshooting of Inverter Circuit (U) and Magnetron NEW H.V.

This oven is programmed with a self diagnostics failure code system which will help for troubleshooting. H97, H98, and H99 are the provided failure codes to indicate magnetron and inverter circuit problem areas. This section explains failure codes of H97, H98, and H99. First, you must program the DPC by pressing Clock, Time, Start, Power Level. Program unit for operation. H97, H98, H99 appears in display window a short time after start key is pressed and there is no microwave oscillation.



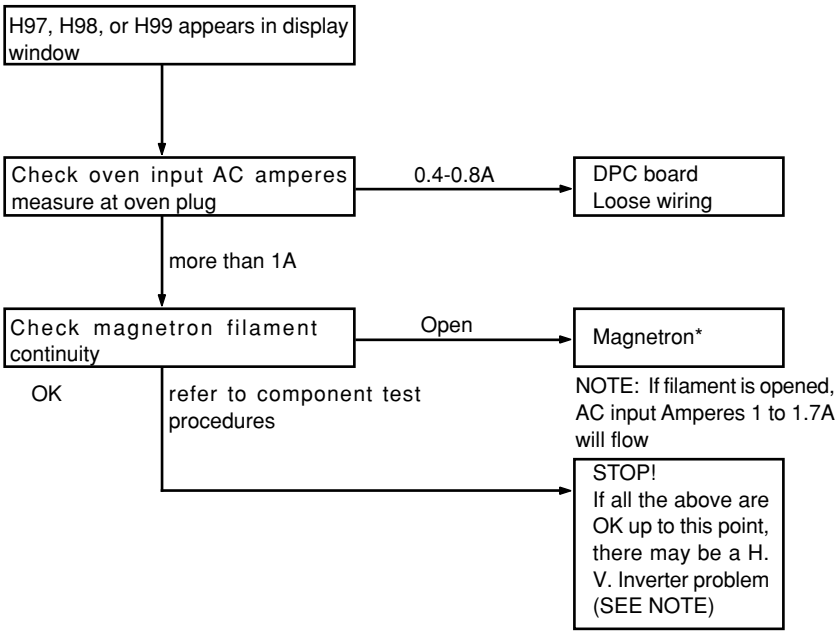

**NOTE:** After check, unplug unit to reset to normal operation mode.

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

### Alternate way to troubleshoot oven with AC Ampere meter used

H97, H98, H99 appears in display window a short time after start key is pressed and no microwave oscillation with AC Ampere meter used for troubleshooting


H97, H98, or H99 appears in display window
Check oven input AC amperes measure at oven plug
0.4-0.8A
DPC board
Loose wiring
more than 1A
Check magnetron filament continuity
Open
Magnetron*
OK
refer to component test procedures
NOTE: If filament is opened, AC input Amperes 1 to 1.7A will flow
STOP!
If all the above are OK up to this point, there may be a H. V. Inverter problem (SEE NOTE)

**NOTE: After check, unplug unit to reset to normal operation mode.**

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT

RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

# Trouble Related to Digital Programmer Circuit

| SYMPTOM | STEP | CHECK | RESULT | CAUSE/CORRECTIONS |
|---|---|---|---|---|
| No display when oven is first plugged in.<br>Oven is dead. | 1 | Fuse pattern of DPC | Normal<br>Open (NOTE) | STEP 2<br>Shorted Circuit of ZNR, L.V.T., Oven Lamp etc.<br>Replace DPC |
| | 2 | Low voltage transformer (LVT) secondary voltage | Abnormal 0V<br>Normal | LVT<br>→ Step 3 |
| | 3 | IC-1 pin 8 voltage<br>(Emitter of Q10) | Abnormal<br>Normal = 5V | ZD10, Q10<br>→ Step 4 |
| | 4 | IC-1 pin 10 voltage<br>(15 pin of IC-220) | Abnormal<br>Normal | IC-220<br>→ IC-1, CX320 |

NOTE

Procedure of fuse pattern repairing is as follows:

1. When the fuse pattern (PF2) opens.

(1) Remove the jumper wire (PF1).

(2) Insert the removed jumper wire (PF1) to "(PF2)" position and solder it. If both "PF1" and "PF2" fuse patterns are open, please replace DPC.

2. When the fuse pattern (PF4) opens.

(1) Remove the jumper wire (PF3).

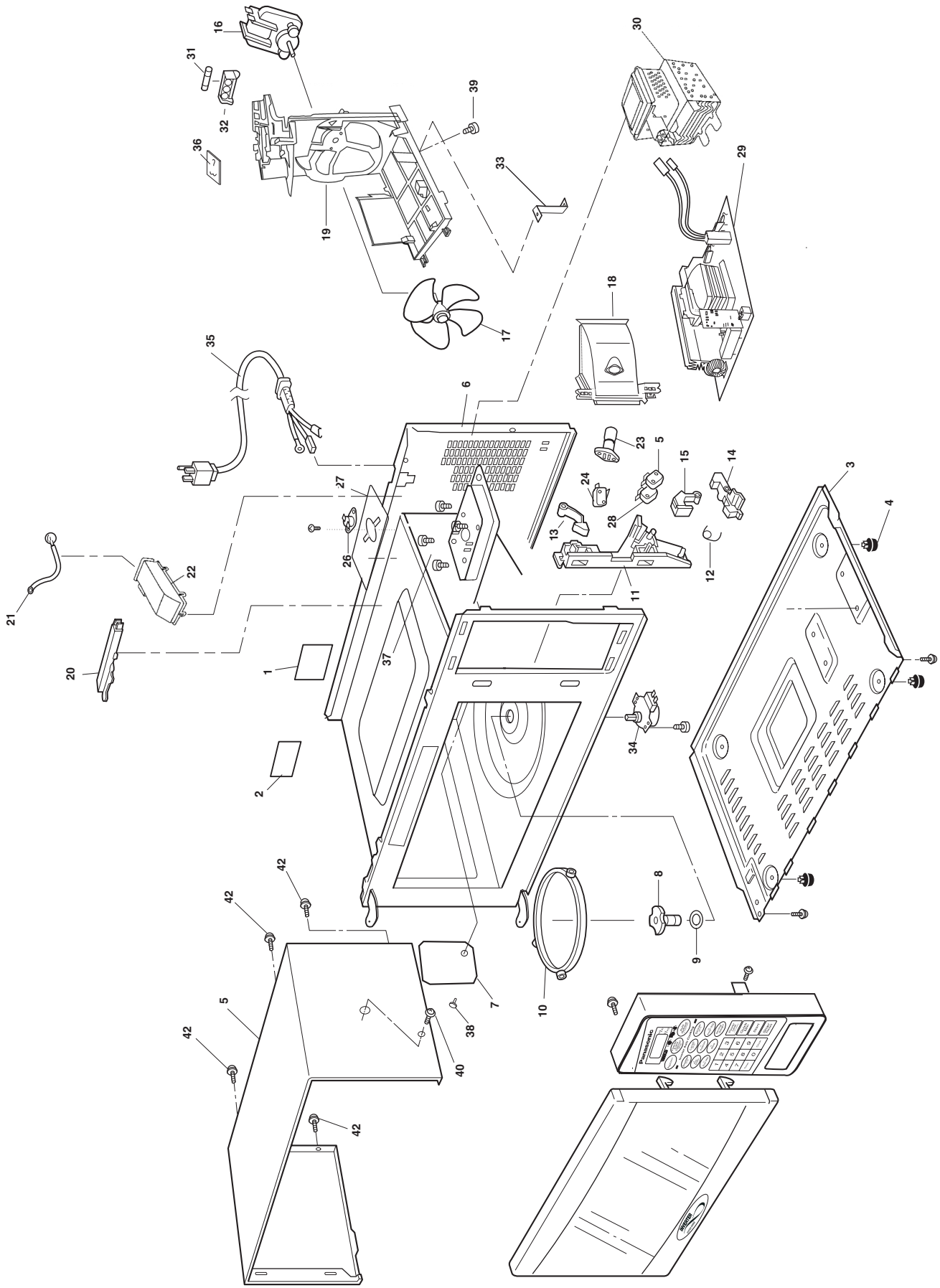
(2) Insert the removed jumper wire (PF3) to "(PF4)" position and solder it. If both "PF3" and "PF4" fuse patterns are open, please replace DPC.

NOTE:* At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance).
If any abnormal condition is detected, replace the defective parts.

| SYMPTOM | STEP | CHECK | RESULT | CAUSE/CORRECTIONS |
|---|---|---|---|---|
| No key input | 1 | Membrane switch continuity | Abnormal | Membrane switch |
| | | | Normal | IC-1 |
| No beep sound | 1 | IC-1 pin 31 voltage | Abnormal | IC-1 |
| | | | Normal | BZ, IC-220 |
| Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped | 1 | IC-1 pin 32 voltage while operation | Abnormal | IC-1 |
| | | | Normal = 5V | → Step 2 |
| | 2 | Short circuit between pin 6 and pin 16 of IC-220 | Still not turn on | RY-2 |
| | | | RY-2 turns on | IC-220 |
| No microwave oscillation at any power setting | 1 | IC-1 pin 38 and pin 39 voltages while operation at high power | Abnormal | IC-1 |
| | | | Normal<br>5---5V, 15---5V | → Step 2 |
| | 2 | Q220 transistor | Abnormal | Q220 |
| | | | Normal | IC-220, RY-1 |
| Dark or unclear display | 1 | Replace display and check operation | Normal | DISPLAY |
| | | | Abnormal | IC-1 |
| Missing or lighting of unnecessary segment | 1 | Replace IC-1 and check operation | Normal | IC-1 |
| | | | Abnormal | DISPLAY |
| H97/H98 appears in window and oven stops operation. Program High power for 1 minute and conduct following test quickly, unless H97/H98 appears and oven stops. NEW H.V. | 1 | Unplug CN702(2 pin) connector and measure voltage between terminals | 0V | 1. Latch Switch<br>2. DPC/Power Relay |
| | | | AC line voltage of 120V | → Step 2 |
| | 2 | Unplug CN701(3 pin) connector and measure pin 1 voltage | 0V | DPC |
| | | | Approx. AC 3V | Magnetron |

| **TO BE CONTINUED FOR SENSOR MODELS** | | | | |
|---|---|---|---|---|
| Auto sensor cooking does not operate normally.<br>(Steam Sensor cooking does not detect steam from foods.) | 1 | Steam sensor terminal voltage by using high impedance tester (20k Ω/V), when breathe on metal surface of sensor | Abnormal = 0V | Steam sensor |
| | | | Normal > 10~30mV | IC-1 |

# EXPLODED VIEW AND PARTS LIST



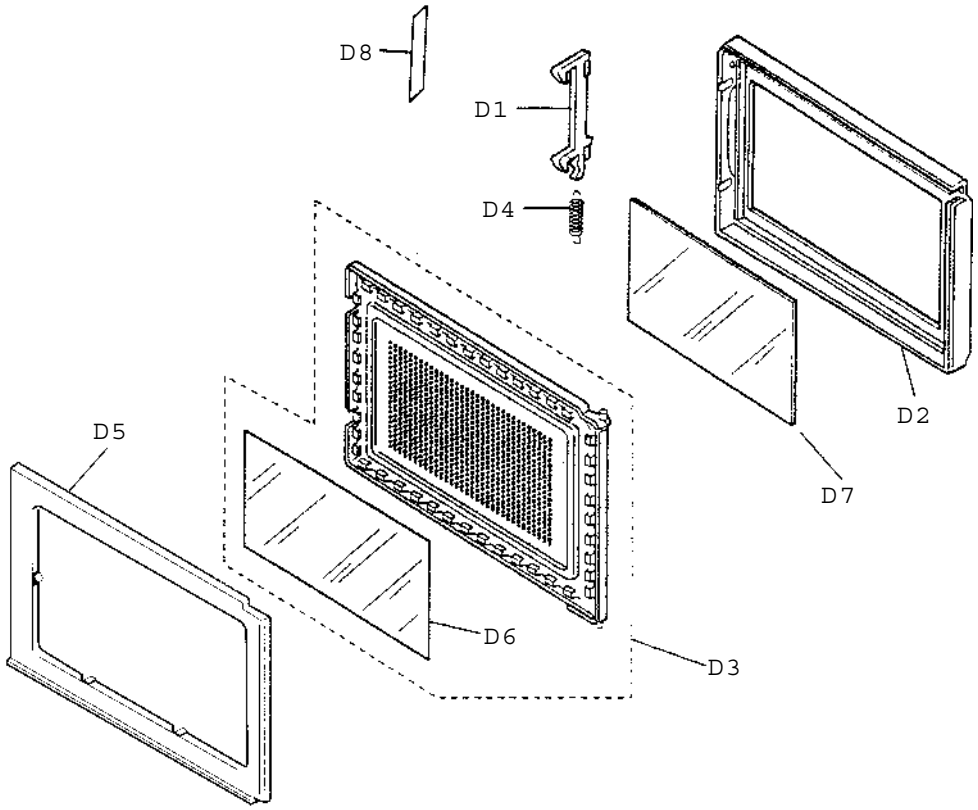
# PARTS LIST

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this part list.
Do not use description of the part.
2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks |
|---|---|---|---|---|---|
| 1 | | F00069660AP | CAUTION LABEL | 1 | ******APH |
| 1 | | F00067600CP | CAUTION LABEL | 1 | ******CPH |
| 2 | | F00074T00BAP | NAME PLATE | 1 | S560BFAPH |
| 2 | | F00074T00HAP | NAME PLATE | 1 | S560WFAPH |
| 2 | | F00074T00BCP | NAME PLATE | 1 | S560BFCPH |
| 2 | | F00074T00HCP | NAME PLATE | 1 | S560WFCPH |
| 2 | | F00074T10BAP | NAME PLATE | 1 | S550BFAPH |
| 2 | | F00074T10HAP | NAME PLATE | 1 | S550WFAPH |
| 2 | | F00074T20BAP | NAME PLATE | 1 | S540BFAPH |
| 2 | | F00074T20HAP | NAME PLATE | 1 | S540WFAPH |
| 2 | | F00074T20BCP | NAME PLATE | 1 | S540BFCPH |
| 2 | | F00074T20HCP | NAME PLATE | 1 | S540WFCPH |
| 2 | | F00074T30BAP | NAME PLATE | 1 | L530BFAPH |
| 2 | | F00074T30HAP | NAME PLATE | 1 | L530WFAPH |
| 2 | | F00074T30HCP | NAME PLATE | 1 | L530WFCPH |
| 2 | | F00074T40HCP | NAME PLATE | 1 | L520WFCPH |
| 2 | | F00074T50HCP | NAME PLATE | 1 | S510WFCPH |
| 3 | | F10014T00AP | BASE | 1 | |
| | | | | | |
| 4 | | F10084T00AP | RUBBER FOOT | 4 | |
| 5 | | F110D4T00BAP | CABINET BODY (U) | 1 | ****BF*PH |
| 5 | | F110D4T00HAP | CABINET BODY (U) | 1 | ****WF*PH |
| 6 | ⚠ | F201A4T00AP | OVEN (U) | 1 | S560*F*PH |
| 6 | ⚠ | F201A4T10AP | OVEN (U) | 1 | EXCEPT S560*F*PH |
| 7 | | F20554T00AP | COVER | 1 | |
| 8 | | F21314T00AP | PULLY SHAFT | 1 | |
| 9 | | ANE2177-F80 | WASHER | 1 | |
| 10 | | B290D9330AP | ROLLER RING (U) | 1 | |
| | | | | | |
| 11 | ⚠ | B3020-1480 | DOOR HOOK | 1 | |
| 12 | | J3097-1480 | LATCH SPRING | 1 | |
| 13 | | B3136-1480 | HOOK LEVER A | 1 | |
| 14 | | B3137-1480 | HOOK LEVER B | 1 | |
| 15 | | B3138-1480 | HOOK LEVER C | 1 | |

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks |
|---|---|---|---|---|---|
| 16 | | F400A4T00AP | FAN MOTOR | 1 | AC120V, SINGLE PHASE, 60Hz |
| 17 | | F40084T00AP | FAN BLADE | 1 | |
| 18 | | F40254T00AP | AIR GUIDE A | 1 | |
| 19 | | F41444T00AP | ORIFICE | 1 | |
| 20 | | F64505540AP | EXHAUST GUIDE B | 1 | S560*F*PH |
| | | | | | |
| 21 | | A707S4T00AP | STEAM SENSOR | 1 | S560*F*PH |
| 22 | | F65434T00AP | SENSOR BRACKET C | 1 | S560*F*PH |
| 23 | | F612E9660AP | INCANDESCENT LAMP(U) | 1 | 125V, 60Hz, 20W |
| 24 | ⚠ | ANE6142-1450 | MICROSWITCH B | 1 | (V-16G-3C25L) |
| 25 | ⚠ | J61414T00AP | MICROSWITCH A | 1 | (D3V-16G-3C25) |
| | | | | | |
| 26 | ⚠ | F61454050AP | THERMAL CUTOUT | 1 | 120°C, ******CPH |
| 27 | | F66264T00CP | THERMAL CUTOUT MOUNT | 1 | ******CPH |
| 28 | ⚠ | A61785180AP | MICROSWITCH C | 1 | (SHORT SWITCH) (D3V-1G-2C25) |
| 29 | ⚠ | A606Y4T00AP | H.V.INVERTER (U) | 1 | |
| 30 | ⚠ | 2M261-M32F | MAGNETRON | 1 | S560*FAPH, S550*FAPH |
| 30 | ⚠ | 2M261-M32G | MAGNETRON | 1 | S560*FCPH |
| 30 | ⚠ | 2M258-M32F | MAGNETRON | 1 | S540*FAPH, L530*FAPH |
| 30 | ⚠ | 2M258-M32G | MAGNETRON | 1 | S540*FCPG, L530WFCPH,L520WFCPH,S510WFCPH |
| | | | | | |
| 31 | ⚠ | B62308250AP | FUSE | 1 | 18A/120V,60Hz |
| 32 | | B62314000AP | FUSE HOLDER | 1 | ******APH |
| 33 | | F61844T00AP | GROUNDING PLATE | 1 | |
| 34 | | B63264080AP | TURNTABLE MOTOR | 1 | |
| 35 | ⚠ | F900C9660AP | AC CORD W/PLUG | 1 | ******APH |
| 35 | ⚠ | F900C9660CP | AC CORD W/PLUG | 1 | ******CPH |
| | | | | | |
| 36 | | A692Y4T00CP | NOISE FILTER (U) | 1 | ******CPH |
| 37 | | XTWANE+10RU | SCREW | 4 | FOR MAGNETRON |
| 38 | | XST4+5VS | SCREW | 1 | FOR COVER |
| 39 | | XYD4+EE12F | SCREW | 1 | FOR H.V.INVERTER EARTH |
| 40 | | XTCA4+12AFK | SCREW | 1 | FOR CABINET BODY SIDE |

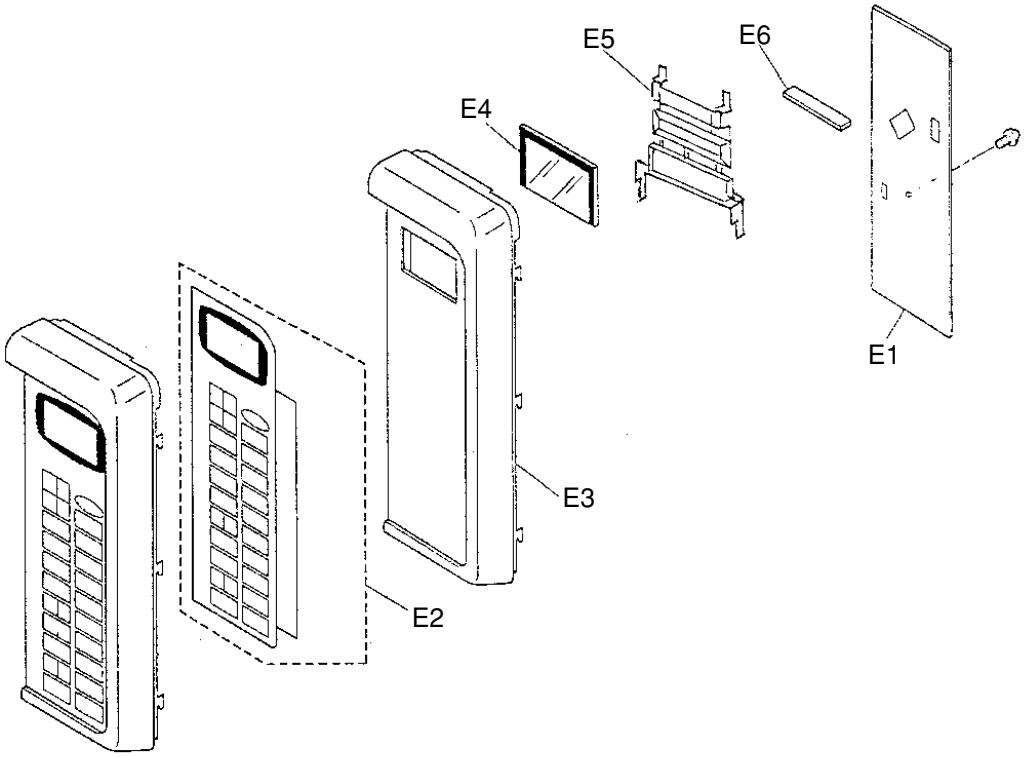
# DOOR ASSEMBLY




(S-4T0)

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks |
|---|---|---|---|---|---|
| D1 | | B3018-1480 | DOOR KEY #A | 1 | |
| D2 | ⚠ | F30014T00BAP | DOOR A | 1 | ****BF*PH |
| D2 | ⚠ | F30014T00HAP | DOOR A | 1 | ****WF*PH |
| D3 | ⚠ | F302K4T00AP | DOOR E (U) | 1 | |
| D4 | | B30214000AP | DOOR KEY SPRING | 1 | |
| D5 | ⚠ | F30854T00AP | DOOR C | 1 | |
| | | | | | |
| D6 | ⚠ | F31454T00AP | DOOR SCREEN A | 1 | |
| D7 | | F31464T00BAP | DOOR SCBEEN B | 1 | ****BF*PH |
| D7 | | F31464T00HAP | DOOR SCREEN B | 1 | ****WF*PH |
| D8 | | B02454180AP | DHHS LABEL | 1 | *****FAPH |
| D8 | | B04114180CP | CSA LABEL | 1 | *****FCPH |

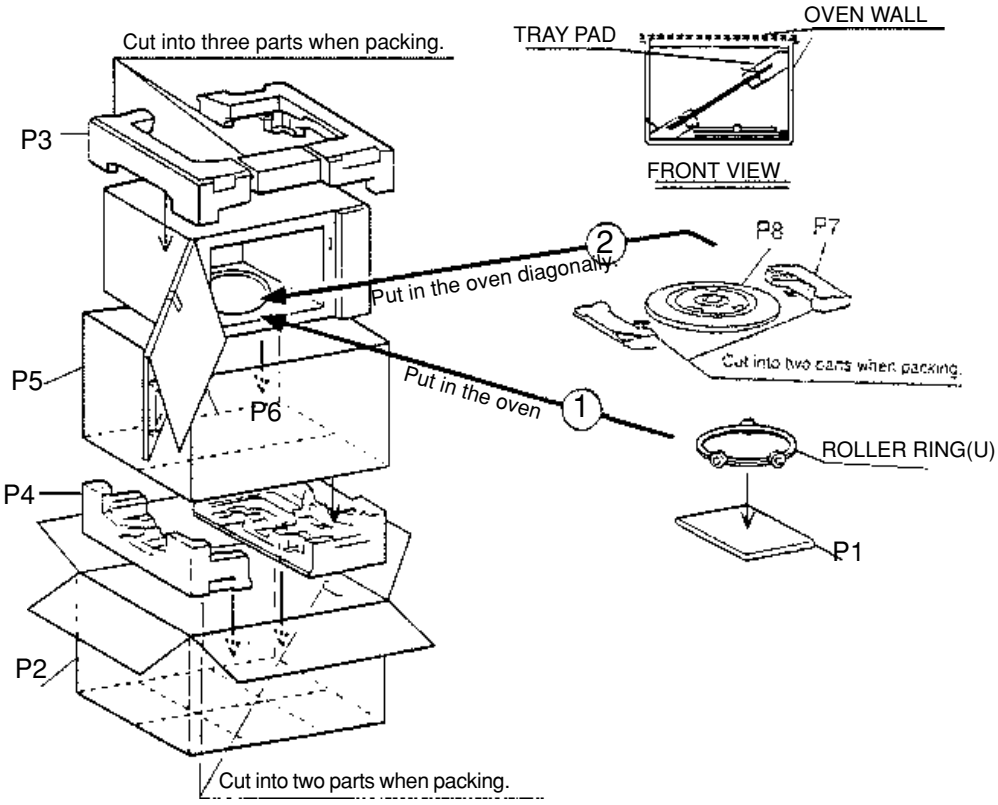
# ESCUTHEON BASE ASSEMBLY




(S-4T0)

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks | |
|---|---|---|---|---|---|---|
| E1 | | F603L4T00AP | D.P.CIRCUIT | 1 | S560BFAPH/S560WFAPH | RTL (W/COMPONENT) |
| E1 | | F603L4T00CP | D.P.CIRCUIT | 1 | S560BFCPH/S560WFCPH | RTL (W/COMPONENT) |
| E1 | | F603L4T10AP | D.P.CIRCUIT | 1 | S550BFAPH/S550WFAPH | RTL (W/COMPONENT) |
| E1 | | F603L4T20AP | D.P.CIRCUIT | 1 | S540BFAPH/S540WFAPH | RTL (W/COMPONENT) |
| E1 | | F603L4T20CP | D.P.CIRCUIT | 1 | S540BFCPH/S540WFCPH | RTL (W/COMPONENT) |
| E1 | | F603L4T30AP | D.P.CIRCUIT | 1 | L530BF/WFAPH | RTL (W/COMPONENT) |
| E1 | | F603L4T30CP | D.P.CIRCUIT | 1 | L530WF/L520WFCPH | RTL (W/COMPONENT) |
| E1 | | F603L4T50CP | D.P.CIRCUIT | 1 | S510WFCPH | RTL (W/COMPONENT) |
| E2 | | F603Y4T00BAP | MEMBRANE SWITCH (U) | 1 | S560BFAPH | |
| E2 | | F630Y4T00HAP | MEMBRANE SWITCH (U) | 1 | S560WFAPH | |
| E2 | | F630Y4T00BCP | MEMBRANE SWITCH (U) | 1 | S560BFCPH | |
| E2 | | F630Y4T00HCP | MEMBRANE SWITCH (U) | 1 | S560WFCPH | |
| E2 | | F630Y4T10BAP | MEMBRANE SWITCH (U) | 1 | S550BFAPH | |
| E2 | | F630Y4T10HAP | MEMBRANE SWITCH (U) | 1 | S550WFAPH | |
| E2 | | F630Y4T20BAP | MEMBRANE SWITCH (U) | 1 | S540BFAPH/S540BFCPH | |
| E2 | | F630Y4T20HAP | MEMBRANE SWITCH (U) | 1 | S540WFAPH/S540WFCPH | |
| E2 | | F630Y4T30BAP | MEMBRANE SWITCH (U) | 1 | L530BFAPH | |
| E2 | | F630Y4T30HAP | MEMBRANE SWITCH (U) | 1 | L530WFAPH/L530WFCPH | |
| E2 | | F630Y4T40HCP | MEMBRANE SWITCH (U) | 1 | L520WFCPH | |
| E2 | | F630Y4T50HCP | MEMBRANE SWITCH (U) | 1 | S510WFCPH | |
| E3 | | F80344T00BAP | ESCUTCHEON BASE | 1 | S560BFAPH/S550BFAPH/S540BFAPH/L530BFAPH | |
| E3 | | F80344T00HAP | ESCUTCHEON BASE | 1 | S560WFAPH/S550WFAPH/S540WFAPH/L530WFAPH | |
| E3 | | F80344T50BCP | ESCUTCHEON BASE | 1 | S560WFCPH/S540BFCPH | |
| E3 | | F80344T50HCP | ESCUTCHEON BASE | 1 | S560WFCPH/S540WFCPH/L530WFCPH/L520WFCPH/S510WFCPH | |
| E4 | | AEDDRCD4T0AP | DISPLAY | 1 | | |
| E5 | | F66174T00AP | DISPLAY TUBE COVER | 1 | | |
| E6 | | A67004T00AP | RUBBER CONNECTOR | 1 | | |

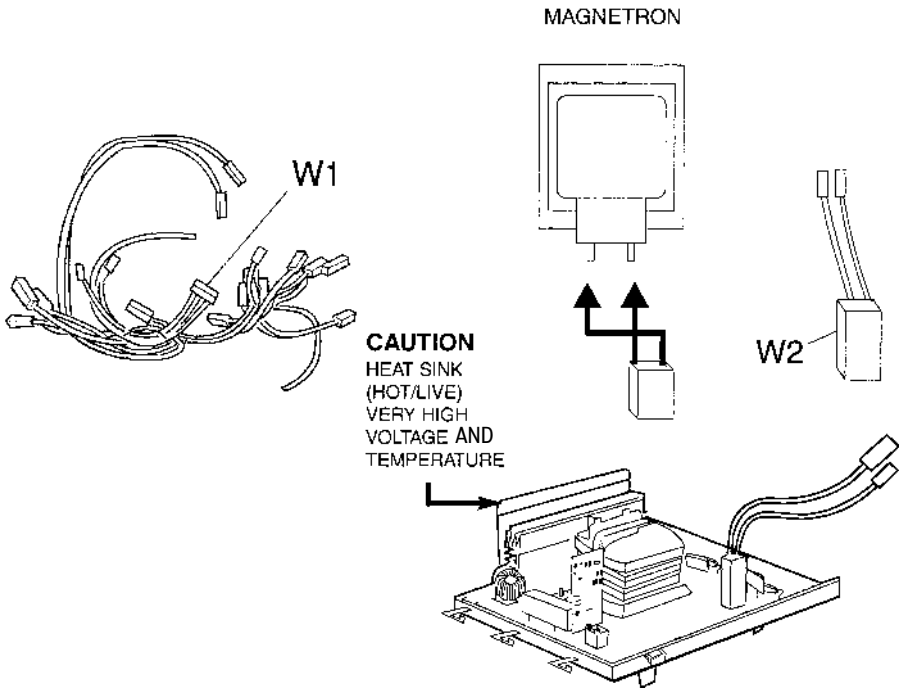
# PACKING AND ACCESORIES




(S-4T0)

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks |
|---|---|---|---|---|---|
| P1 | | F00034T00AP | INSTRUCTION MANUAL | 1 | S560BFAPH/S560WFAPH |
| P1 | | F00034T00CP | INSTRUCTION MANUAL | 1 | S560BFCPH/S560WFCPH |
| P1 | | F00034T10AP | INSTRUCTION MANUAL | 1 | S550BFAPH/S550WFAPH |
| P1 | | F00034T20AP | INSTRUCTION MANUAL | 1 | S540BF/WFAPH,L530BF/WFAPH |
| P1 | | F00034T20CP | INSTRUCTION MANUAL | 1 | S540BFCPH/S540WFCPH |
| P1 | | F00034T30CP | INSTRUCTION MANUAL | 1 | L530WFCPH |
| P1 | | F00034T40CP | INSTRUCTION MANUAL | 1 | L520WFCPH |
| P1 | | F00034T50CP | INSTRUCTION MANUAL | 1 | S510WFCPH |
| P2 | | F01024T00BAP | PACKING CASE,PAPER | 1 | S560BFAPH |
| P2 | | F01024T00HAP | PACKING CASE,PAPER | 1 | S560WFAPH |
| P2 | | F01024T00BCP | PACKING CASE,PAPER | 1 | S560BFCPH |
| P2 | | F01024T00HCP | PACKING CASE,PAPER | 1 | S560WFCPH |
| P2 | | F01024T10BAP | PACKING CASE,PAPER | 1 | S550BFAPH |
| P2 | | F01024T10HAP | PACKING CASE,PAPER | 1 | S550WFAPH |
| P2 | | F01024T20BAP | PACKING CASE,PAPER | 1 | S540BFAPH |
| P2 | | F01024T20HAP | PACKING CASE,PAPER | 1 | S540WFAPH |
| P2 | | F01024T20BCP | PACKING CASE,PAPER | 1 | S540BFCPH |
| P2 | | F01024T20HCP | PACKING CASE,PAPER | 1 | S540WFCPH |
| P2 | | F01024T30BAP | PACKING CASE,PAPER | 1 | L530BFAPH |
| P2 | | F01024T30HAP | PACKING CASE,PAPER | 1 | L530WFAPH |
| P2 | | F01024T30HCP | PACKING CASE,PAPER | 1 | L530WFCPH |
| P2 | | F01024T40HCP | PACKING CASE,PAPER | 1 | L520WFCPH |
| P2 | | F01024T50HCP | PACKING CASE,PAPER | 1 | S510WFCPH |
| P3 | | F01044T00AP | UPPER FILLER | 1 | |
| P4 | | F01054T00AP | LOWER FILLER | 1 | |
| P5 | | B01068290AP | P.E.BAG | 1 | |
| | | | | | |
| P6 | | B01075640AP | DOOR SHEET | 1 | |
| P7 | | F01134T00AP | TRAY STYROL | 1 | |
| P8 | | A06014T00AP | COOKING TRAY | 1 | |

# WIRING MATERIAL




(S-4T0)

| Ref.No. | | Part No. | Part name & Description | Pcs/ set | Remarks |
|---|---|---|---|---|---|
| W1 | | F030A4T20AP | LEAD WIRE HARNESS | 1 | ******APH |
| W1 | | F030A4T00CP | LEAD WIRE HARNESS | 1 | ******CPH |
| W2 | | F030E4T00AP | H.V. LEAD WIRE | 1 | ******APH |
| W2 | | F030E4T00CP | H.V. LEAD WIRE | 1 | ******CPH |

# DIGITAL PROGRAMMER CIRCUIT

**(NN-S560BFAPH/CPH,S560WFAPH/CPH)**

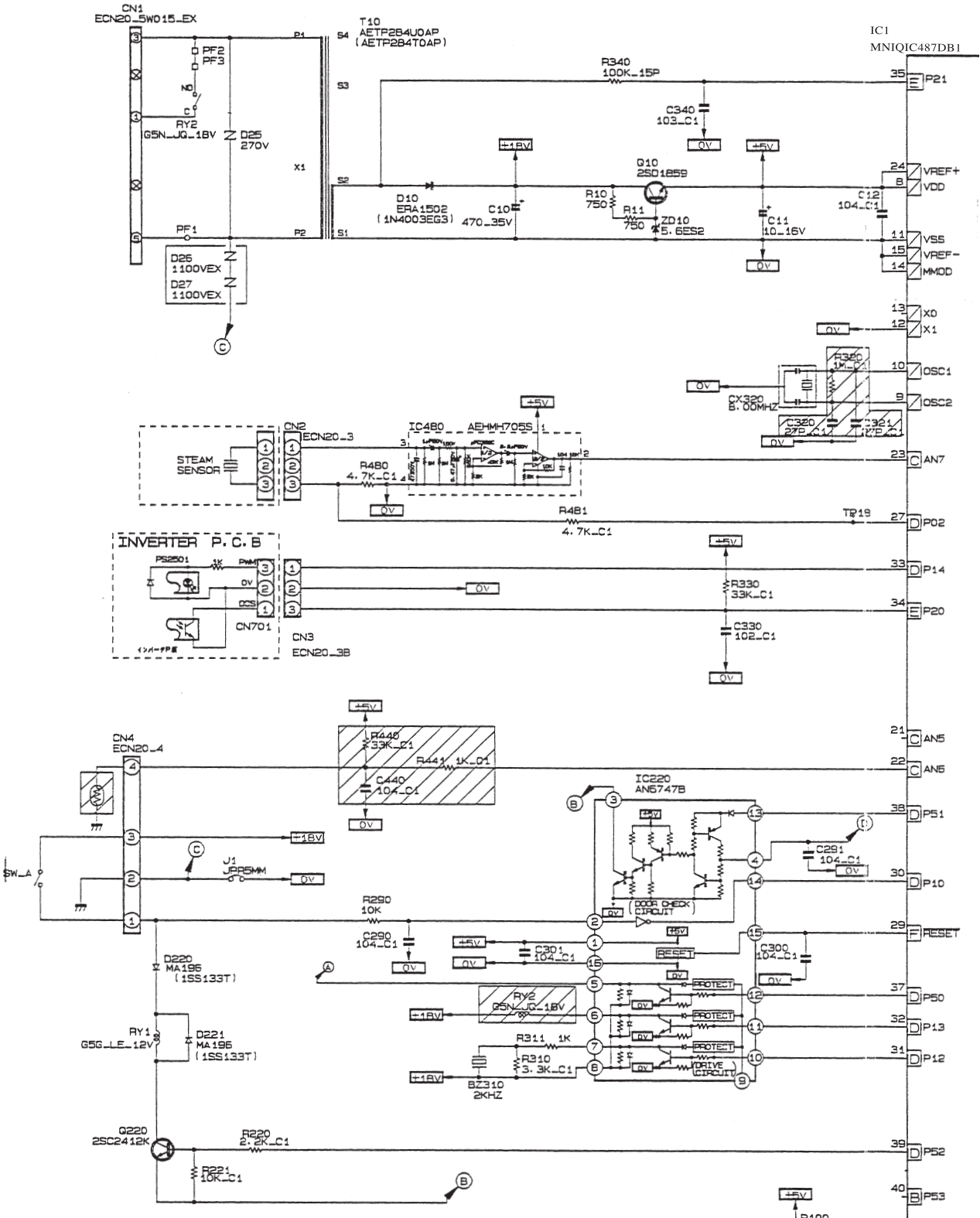
PARTS LIST

| Ref.No. | | Part No. | Part name & Description | Pcs/ Set | Remarks |
|---|---|---|---|---|---|
| BZ310 | | AEFB22EP20TL | BUZZER | 1 | 2.0KHz |
| C12,C290,C291,C300,C301 | | AECUB2F104ZK | CAPACITOR | 5 | 0.1μF/25V |
| C330 | | AECUB5C102KK | CAPACITOR | 1 | 0.1μF/50V |
| C340 | | AECUB5F103ZK | CAPACITOR | 1 | 0.01μF/50V |
| C10 | | ECEA1VM471B | ELECTROLYTIC CAPACITOR A | 1 | 470μF/35V |
| C11 | | ECEA1CKA100B | ELECTROLYTIC CAPACITOR A | 1 | 10μF/16V |
| CN1 | | AEEMXF01505W | CONNECTOR | 1 | |
| CN2 | | AEEMMF00703W | CONNECTOR | 1 | |
| CN3 | | AEEMXF00703B | CONNECTOR | 1 | |
| CN4 | | AEEMXF00F04W | CONNECTOR | 1 | |
| CX320 | | AEFOS800MG06 | CERAMIC RESONATOR | 1 | 6.8MHz |
| D180,D181,D182,D183 | | AESQSML210MT | LED | 4 | |
| D10 | | AESSIN4003E | DIODE,SI | 1 | |
| D40,D41,D220,D221 | | MA196-(TA5) | DIODE,SI | 4 | |
| D25 | | AERZ271NS10D | VARISTOR | 1 | |
| D26,27 | | AERZB00NS10D | VARISTOR | 2 | |
| IC1 | | MN101C487DB1 | L.S.I | 1 | |
| IC220 | | AN6747B | IC | 1 | |
| Q181,Q40,Q220 | | 2SC2412KT146 | TRANSISTOR | 3 | |
| Q10,Q180 | | 2SD1859TV2Q | TRANSISTOR | 2 | |
| R100,R101,R102,R221 | | AERJ3GSYJ103 | RESISTOR | 4 | 10K,1/16W,50% |
| R40,R41,R42,R43,44,R45, R46,R47,R48 | | AERJ3GSYJ104 | RESISTOR | 9 | 100K,1/16W,50% |
| R49 | | AERJ3GSYJ154 | RESISTOR | 1 | 150K,1/16W,5% |
| R220 | | AERJ3GSYJ222 | RESISTOR | 1 | 2.2K,1/16W,5% |
| R310 | | AERJ3GSYJ332 | RESISTOR | 1 | 3.3K,1/16W,5% |
| R330 | | AERJ3GSYJ333 | RESISTOR | 1 | 3.3K,1/16W,5% |
| R181 | | AERJ3GSYJ360 | RESISTOR | 1 | 36Ω,1/4W,5% |
| R480,R481 | | AERJ3GSYJ472 | RESISTOR | 2 | 4.7K,1/4W,5% |
| R311 | | RD16ST102J | RESISTOR | 1 | 1K,1/4W,5% |
| R180,R290 | | RD16ST103J | RESISTOR | 2 | 10K,1/4W,5% |
| R340 | | RD16ST104J | RESISTOR | 1 | 100K,1/4W,5% |
| R10,R11 | | RD16ST751J | RESISTOR | 2 | 750Ω,1/4W,5% |
| RY1 | | AEGG5G1A12 | POWER RELAY | 1 | |
| IC480 | | AEHMH705S | SENSOR IC | 1 | |
| T10 | | AETP284T0AP | LOW VOLTAGE TRANSFORMER | 1 | |
| ZD10 | | AESZMTAJ5R6B | ZENER DIODE | 1 | |

# DIGITAL PROGRAMMER CIRCUIT (NN-S530BFAPH/CPH,S540BFAPH/CPH,S540WFAPH/CPH,L530BFAPH/CPH, L530WFAPH/CPH,L520WFAPH/CPH,L510WFAPH/CPH)

PARTS LIST

| Ref.No. | | Part No. | Part name & Description | Pcs/ Set | Remarks |
|---|---|---|---|---|---|
| BZ310 | | AEFB22EP20TL | BUZZER | 1 | 2.0KHz |
| C12,C290,C291,C300,C301 | | AECUB2F104ZK | CAPACITOR | 5 | 0.1MF/25V |
| C330 | | AECUB5C102KK | CAPACITOR | 1 | 0.1MF/50V |
| C340 | | AECUB5F103ZK | CAPACITOR | 1 | 0.01MF/50V |
| C10 | | ECA1VM471B | ELECTROLYTIC CAPACITOR AL | 1 | 470MF/35V |
| C11 | | ECEA1CKA100B | ELECTROLYTIC CAPACITOR AL | 1 | 10MF/16V |
| CN1 | | AEEMXF01505W | CONNECTOR | 1 | |
| CN3 | | | CONNECTOR | 1 | |
| CN4 | | AEEMXF00F04W | CONNECTOR | 1 | |
| CX320 | | AEFOS800MG06 | CERAMIC RESONATOR | 1 | 6.8MHz |
| D180,D181,D182,D183 | | AESQSML210MT | LED | 4 | |
| D10 | | AESSIN4003E | DIODE,SI | 1 | |
| D40,D41,D220,D221 | | MA196-(TA5) | DIODE,SI | 4 | |
| D25 | | AERZ271NS10D | VARISTOR | 1 | |
| IC1 | | MN101C487DB1 | L.S.I | 1 | |
| IC220 | | AN6747B | IC | 1 | |
| Q181,Q40,Q220 | | 2SC2412KT146 | TRANSISTOR | 3 | |
| Q10,Q180 | | 2SD1859TV2Q | TRANSISTOR | 2 | |
| R100,R101,R102,R221 | | AERJ3GSYJ103 | RESISTOR | 4 | 10K,1/16W,5% |
| R40,R41,R42,R43,R44,R45, R46,R47,R48 | | AERJ3GSYJ104 | RESISTOR | 9 | 100K,1/16W,5% |
| R49 | | AERJ3GSYJ154 | RESISTOR | 1 | 150K,1/16W,5% |
| R220 | | AERJ3GSYJ222 | RESISTOR | 1 | 2.2K,1/16W,5% |
| R310 | | AERJ3GSYJ332 | RESISTOR | 1 | 3.3K,1/16W,5% |
| R330 | | AERJ3GSYJ333 | RESISTOR | 1 | 3.3K,1/16W,5% |
| | | AERJ3GSYJ360 | RESISTOR | 1 | 36Ω,1/4W,5% |
| | | RD16ST102J | RESISTOR | 1 | 1K,1/4W,5% |
| R180,R290 | | RD16ST103J | RESISTOR | 2 | 10K,1/4W,5% |
| R340 | | RD16ST104J | RESISTOR | 1 | 100K,1/4W,5% |
| R10,R11 | | RD16ST751J | RESISTOR | 2 | 750Ω,1/4W,5% |
| RY1 | | AEGG5G1A12 | POWER RELAY | 1 | |
| T10 | | AETP284T0AP | LOW VOLTAGE TRANSFORMER | 1 | |
| ZD10 | | AESZMTZJ5R6B | ZENER DIODE | 1 | |




| P. C. B. No. | JPR1 | JPR2 | JPR3 | JPR4 | D26, D27 |
|---|---|---|---|---|---|
| F603L4T00AP | SHORT | SHORT | OPEN | OPEN | × |
| F603L4T00CP | SHORT | OPEN | OPEN | OPEN | 1100VEX |
| | | | | | |
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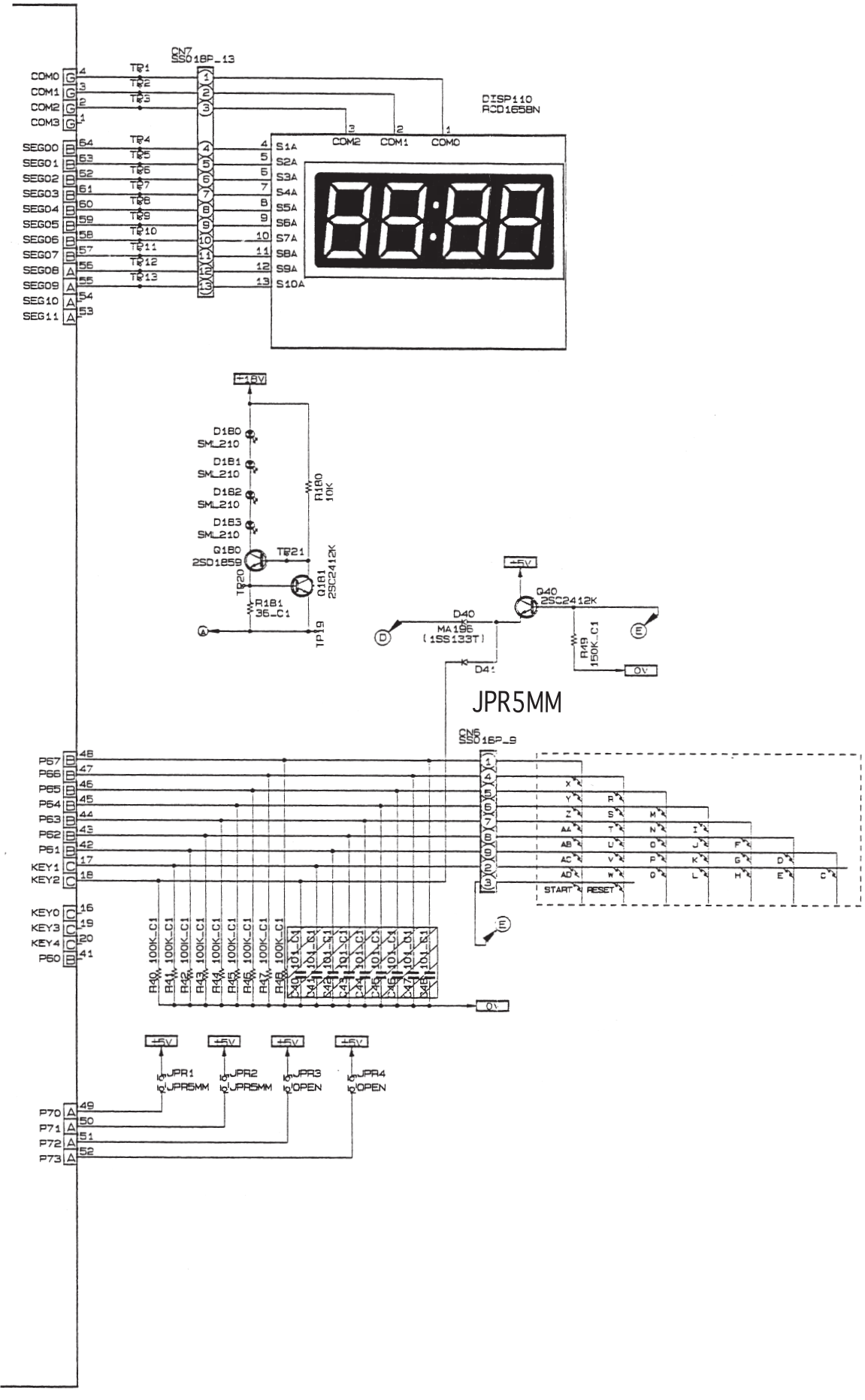
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SS018P_13
COM0
COM1
COM2
COM3
SEG00
SEG01
SEG02
SEG03
SEG04
SEG05
SEG06
SEG07
SEG08
SEG09
SEG10
SEG11
DISP110
ACD1658N
COM2
COM1
COM0
S1A
S2A
S3A
S4A
S5A
S6A
S7A
S8A
S9A
S10A
+18V
D180
SML_210
D181
SML_210
D182
SML_210
D183
SML_210
R180
10K
Q180
2SD1859
Q181
2SC2412K
R181
36_C1
+5V
Q40
2SC2412K
D40
MA196
(1SS133T)
R49
150K_C1
0V
JPR5MM
CN6
SS016P_9
P67
P66
P65
P64
P63
P62
P61
KEY1
KEY2
KEY0
KEY3
KEY4
P60
START
RESET
R40 100K_C1
R41 100K_C1
R42 100K_C1
R43 100K_C1
R44 100K_C1
R45 100K_C1
R46 100K_C1
R47 100K_C1
R48 100K_C1
C40 101_C1
C41 101_C1
C42 101_C1
C43 101_C1
C44 101_C1
C45 101_C1
C46 101_C1
C47 101_C1
C48 101_C1
JPR1
JPR5MM
JPR2
JPR5MM
JPR3
OPEN
JPR4
OPEN
P70
P71
P72
P73

# Model for Latin America & Mexico

| MODELS | RPH | |
|---|---|---|
| | Mexico | Latin America |
| NN-S540BF/WF | | ○ |
| NN-540BF/WF | ○ | ○ |

* This product is based on NN-S540BF/WF APH model, the different parts are listed as followings:
* Any serviceman who has any quiries or order service parts, please contact own area's service company

| Ref.No. | | Part No. | Part name & Description | Pcs/ Set | Remarks |
|---|---|---|---|---|---|
| 2 | | F00074T20BRP | NAME PLATE | 1 | NN-S540BF |
| 2 | | F00074T20HRP | NAME PLATE | 1 | NN-S540WF |
| 2 | | F00074T70BRP | NAME PLATE | 1 | NN-540BF |
| 2 | | F00074T70HRP | NAME PLATE | 1 | NN-540WF |
| E1 | | F603L4T70RP | D.P.CIRCUIT | 1 | NN-S540BF/WF, NN-540BF/WF |
| E2 | | F603Y4T20BAP | MEMBRANE SWITCH(U) | 1 | NN-S540BF |
| E2 | | F603Y4T20HAP | MEMBRANE SWITCH(U) | 1 | NN-S540WF |
| E2 | | F603Y4T70BRP | MEMBRANE SWITCH(U) | 1 | NN-540BF |
| E2 | | F603Y4T70HRP | MEMBRANE SWITCH(U) | 1 | NN-540WF |
| P1 | | F00034T20RP | INSTRUCTION MANUAL | 1 | NN-S540BF/WF, NN-540BF/WF |
| P2 | | F01024T20BAP | PACKING CASE, PAPER | 1 | NN-S540BF |
| P2 | | F01024T20HAP | PACKING CASE, PAPER | 1 | NN-S540WF |
| P2 | | F01024T70BRP | PACKING CASE, PAPER | 1 | NN-540BF |
| P2 | | F01024T70HRP | PACKING CASE, PAPER | 1 | NN-540WF |

5/00
S-4T0
S-4T1
S-4T2
S-4T3
S-4T4
S-4T5
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